Automated Court Decision Platform in Ecuador: Advancing Judicial Processes through Information and Communication Technologies

Christopher Reyes-Lopez, M.SC.[1] , and Rafael Centeno-Rodríguez M.SC.[2]
[1]Universidad Politécnica Salesiana Sede Guayaquil (SMART-TECH), Ecuador, creyesl@ups.edu.ec
[2]Civil Judicial Unit of Guayaquil, Ecuador, rafael.centeno@funcionjudicial.gob.ec

Abstract– The integration of information and communication technologies (ICTs) and artificial intelligence (AI) to justice system institutions, around the world, has been lately used to improve their management and performance. Such incorporation lets courts automate routine administrative tasks, allowing legal professionals to focus on more complex and strategic aspects of their work. All this can be achieved through the development and use of technological tools that simplify and speed up tasks, resulting in the amelioration of the management and processing of cases, the enrichment of the quality of information, and the facilitation of judicial decision-making. In this context, this paper aims to identify the automated court decision platforms (ACDP), focusing on the technology behind it. ACDP is a cutting-edge system designed to revolutionize the process of generating court decisions; however, some of those who know and work in the Ecuadorian Judiciary are somewhat opposed to the digitalization of verdicts. Awareness rises among the interviewees who participated in a small focus group prepared to discuss these formats. Participants remark on how mediation by the Judge bear personalized solutions based on verbal and nonverbal interactions with the intervening parties, especially considering that the concepts and topics covered are as ethereal as justice and equity.

Keywords-- Automation of justice, digital court hearings and decisions, ICT in judicial processes, justice through AI.

I. INTRODUCTION

Since the appearance of the ICTs, they have been used to automate and enhance different tasks in so many professional fields, going from engineering to humanities. Several years ago, the enhancement of the justice system institutions began by the integration of the ICTs into the courts. Initially, they were present via technological equipment and software tools that allowed to store documents on the cloud that could be accessed by the judge and the parties, what improve the quality of information, as well as the ease to find it.

The use of ICTs in the context of the functioning of justice system institutions depends on the objectives for which they are implemented [1]. They play a pivotal role in improving the management and performance of justice system institutions. These technologies enable streamlined communication, information sharing, and collaboration among legal professionals, judges, and administrative staff. Advanced case management systems, digital documentation, and electronic filing systems enhance the efficiency of legal processes, reducing paperwork and administrative burdens.

Additionally, ICT facilitates remote access to legal resources and virtual court proceedings, allowing for greater accessibility and flexibility [2]. Online platforms for case tracking and scheduling contribute to more transparent and accountable justice systems, providing stakeholders with real-time updates on case statuses. Moreover, data analytics tools within ICT can help analyze trends, identify areas for improvement, and support evidence-based decision-making, ultimately fostering a more efficient, responsive, and technologically empowered justice system.

In theory, more advantages could be reached if AI is used to automate routine administrative tasks. In the realm of case management, AI can assist in analyzing vast amounts of legal data, facilitating quicker and more accurate legal research, which can contribute to more informed decision-making by judges and attorneys [3]. Likewise, AI algorithms can aid in predicting case outcomes based on historical data, thereby assisting in resource allocation, and optimizing court workflows [4]. Furthermore, AI-powered tools can help identify patterns of bias within the justice system, promoting transparency and fairness [5].

A pioneering example is the modernization of information media and technologies under the creation of the Ecuadorian Automatic Judicial Processing System (SATJE), implemented in 2000 [6]. SATJE allowed the Courts of Justice, for the first time, to have access to computerized means, with services such as the review of judicial records without requesting each court [7]. Also, the use of new information technologies as a response to the principles of publicity and celerity was ratified in 2015 via the National Resolution 318-2015 [8]. For this reason, judicial operators in Ecuador, professionals in charge of the procedural development and the achievement of a resolution, have been applying policies that tend to automate the processes of justice for several years.

However, the challenges posed by the COVID-19 health crisis during 2020 made mandatory the use of computational media for access to judicial responsibilities, as a matter of urgency. The legal landscape demanded ICT tools that accomplish efficiency and accuracy in virtual court proceedings, in order to avoid any physical contact. It is then that the ACDP emerges as a technological solution aimed at addressing these challenges by automating the production of court decisions while preserving the integrity of the judicial process. It integrates advanced technologies, including Natural Language Processing (NLP), rule-based systems, and

comprehensive legal databases, to automate and streamline the decision-making process within the judicial domain.

At the very beginning of the pandemic, there were different issues caused by the low level of preparation of justice operators for the use of computerized means and the limitations presented by public institutions to be able to properly implement such means of access [9]. Nevertheless, solutions were found, conveying an increased use of telematic means to access effective judicial protection, allowing judges to directly solve cases from their private spaces. In addition, various software, such as 'VICTOR' [10] and 'Prometea' [11], has been used to generate ACDPs for lawsuits and pleadings, at national and regional level.

In the last years, the Judiciary Council of Ecuador, the Administrative Body of the Judiciary, has implemented formats for lawsuits that do not require a sponsoring attorney, such as small claims, alimony lawsuits, among others. The process consists of downloading and filling out a form provided on the webpage of the institution [12]. Furthermore, there also exist predictive programs that autonomously determine the level of dangerousness of individuals. Despite such tools, it is important to highlight the awareness of replacing judges by automated systems just to fulfill the principles of celerity, predictability, and uniformity, regardless that the sound criticism and the spirit of the Judge are based on the human nature of the officials [13], [14].

II. USE OF TECHNOLOGY FOR LEGAL RESEARCH AND INFORMATION RETRIEVAL IN THE JUSTICE OF THE PEACE.

This section explores the integration of sophisticated technological tools, including artificial intelligence, machine learning, and natural language processing, in legal research and information retrieval by Justices of the Peace. The study conducts a comprehensive analysis of both the advantages and challenges inherent in automating facets of judicial decisions [15], with a particular focus on enhancing efficiency, ensuring accuracy, and addressing potential biases.
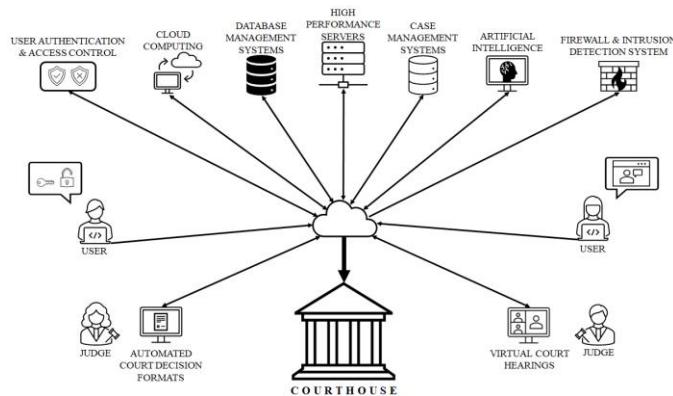

Figure 1- ICT architecture for courthouses.
Source: The authors.

Establishing Information and Communication Technology (ICT) systems to optimize judicial resolutions comprises a comprehensive integration of diverse technologies, meticulously designed to guarantee efficiency, security, and accessibility [16]. The foundational element of this infrastructure lies in robust server hardware, indispensable for managing the computational intricacies of legal databases, case management systems, and Artificial Intelligence (AI) applications crucial to judicial proceedings [17]. High-performance servers are pivotal, ensuring not only responsive operations but also scalability to meet the dynamic demands of the legal landscape.

A fundamental component in this technological architecture is the implementation of reliable Database Management Systems (DBMS) [18], [19], [20]. The selection of systems like Oracle, PostgreSQL, or NoSQL databases is conventional, offering efficient organization and retrieval of legal information. The transition to cloud computing, specifically Infrastructure as a Service (IaaS) models such as Amazon Web Services (AWS) or Microsoft Azure, provides an agile and scalable platform for hosting and managing server infrastructure [21], [22]. This paradigm shift enhances flexibility, scalability, and streamlines maintenance protocols.

Virtualization technologies play a pivotal role by enabling the creation of isolated environments. This innovation optimizes resource utilization and facilitates the deployment of multiple applications on a singular physical server, thereby enhancing operational efficiency. In addition, as in most professional fields, AI is increasingly being employed in the legal domain, including court rulings and decisions, to enhance efficiency, streamline processes, and aid legal professionals in their decision-making [23]. It follows the integration of cutting-edge technologies such as NLP, machine learning, sentiment analysis, and others.

NLP serves for analysis of vast legal databases, court cases, statutes, and legal documents, allowing for comprehensive legal research and the extraction of relevant information for use in court rulings [24], [25], [26]. Machine learning algorithms analyze patterns, precedents, and various factors related to past rulings to provide insights into potential outcomes to predict case [27], [28]. Emotion recognition algorithms can be applied to understand the emotional context of legal arguments or statements made during proceedings, providing additional insights for judges in making informed decisions.

Security considerations are paramount, and the implementation of encryption protocols, notably SSL/TLS, fortifies data transmission security between clients and servers [29]. Augmenting this, robust security measures such as firewalls and intrusion detection systems (IDS) are imperative safeguards against unauthorized access and potential cyber threats [30], [31]. Security is further fortified through robust authentication mechanisms, including multi-factor authentication, and access control systems, ensuring that sensitive legal information remains accessible only to authorized personnel [32].

The development or deployment of advanced case management systems stands as a critical imperative [33]. These systems must efficiently track cases, deadlines, and documents while seamlessly integrating with a spectrum of legal technologies, forming a cohesive and interconnected judicial ecosystem. Efficient document management systems streamline the organization, indexing, and retrieval of legal documents in electronic formats, reducing reliance on traditional paperwork. This transition incorporates version control and access management features for heightened accessibility and security.

The establishment of regular data backups and disaster recovery plans mitigates the potential risk of data loss. Automated backup systems are imperative to uphold data integrity in the face of unforeseen challenges [34]. Seamless integration with external legal databases, information systems, and third-party applications is facilitated through the adept utilization of Application Programming Interfaces (APIs), ensuring a harmonious and interconnected legal tech landscape.

In the realm of collaboration and communication, integrated video conferencing solutions emerge as indispensable tools. These technologies facilitate seamless remote court proceedings and virtual collaboration among legal professionals, witnesses, and other stakeholders, aligning with the demands of contemporary legal practices. Finally, embracing technologies that prioritize privacy and ethical standards is non-negotiable. Techniques such as differential privacy emerge as instrumental in shielding sensitive information while simultaneously allowing for meaningful analysis.

Summarizing, the integration of advanced technologies into the domain of judicial resolutions represents a transformative shift towards a technologically enriched and interconnected legal framework. Navigating the rapidly evolving landscape of legal technology necessitates an unwavering commitment to staying informed about emerging trends in modern jurisprudence. Successful implementation requires a holistic approach, taking into account the specific needs of the judicial system, adherence to legal standards, and continuous maintenance for ensuring the security and currency of the technology stack. Moreover, fostering collaboration with legal professionals is essential to tailor technology solutions to meet the distinctive requirements of the judicial domain.

III. ACDP CONCEPT FOR LEGAL RESOLUTIONS

Automation in judicial decision-making has shifted from traditional paper-based legal documents to digital formats and automated systems for drafting and delivering legal resolutions [35]. In general, these digital formats offer users accessibility and transparency in every step of the legal decision-making process. Moreover, Natural Language Generation (NLG) is employed to automatically generate drafts of court decisions based on the analysis of case information and legal arguments,

producing coherent and structured decision drafts that can be reviewed and edited by legal professionals.

ACDPs are systems designed to streamline and automate the process of generating court decisions or judgments, achieving uniformity of criteria, facilitating judicial decision-making, and finally improving the management and performance of the courts. These systems leverage technology to assist judges, legal professionals, and court personnel in creating standardized and efficient formats for presenting court decisions. ACDPs integrate advanced technologies, and figure 1 presents an overview of how it typically works.
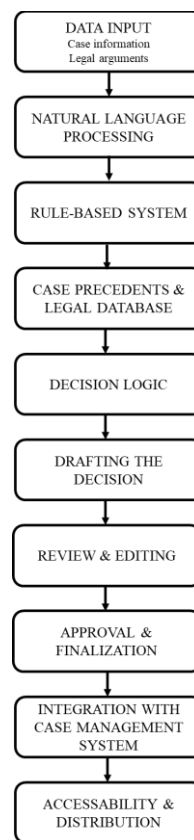

Fig. 2 - Workflow for ACDP.
Source: The authors.

The process begins by entering pertinent case details, such as the case number, involved parties, and court information, into the system. Subsequently, the legal arguments presented by both parties during court proceedings are inputted. After that, NLP algorithms are employed to comprehend and analyze legal arguments, evidence, and relevant information. NLP aids in identifying crucial legal concepts, statutes, and precedents relevant to the case.

Rule-based systems, often integrated into the ACDP, codify legal rules and guidelines, facilitating automated analysis based on established jurisprudence. The system may access a comprehensive legal database containing previous court decisions and case law to find applicable precedents and references. Using decision logic based on the analyzed data, the

system determines the case outcome by applying legal principles, rules, and precedents to reach a well-reasoned decision. The ACDP then generates a draft of the court decision, utilizing predefined templates and formats that include structured sections like the introduction, statement of facts, legal analysis, and the final judgment.

Although the initial draft is automatically generated, legal professionals, such as judges or court clerks, review and edit the document to ensure accuracy, coherence, and compliance with legal standards. Following the review, the court decision is approved and finalized, with the system potentially facilitating electronic signatures or other authentication processes to ensure document authenticity. Further, integration with broader case management systems used by the court allows the ACDP to seamlessly track cases, receive updates, and archive decisions. The finalized court decision becomes accessible through the court's information system and can be distributed electronically to relevant parties, legal professionals, and published on legal databases.

By automating the process of creating court decisions, ACDP aims to improve efficiency, reduce manual errors, and enhance the overall effectiveness of the judicial system. It is important to note that while these systems can assist in decision-making, they typically do not replace the critical judgment and legal expertise of human professionals in the legal field [36]. Furthermore, ethical considerations surrounding the use of technology in judicial decisions, including issues related to privacy, security, and potential biases introduced by algorithms, must be checked constantly.

IV. THE USE OF ACDP IN JUDICIARY BODIES

A Spanish study indicates that automated legal management systems respond to the automated management of the judicial office based on integration, access to information through legal data banks, including legislation, jurisprudence, judicial bibliography, as well as the historical compendium of all processes, for all users, favoring transparency and communication means [37]. This section considers the previous concept to set the basis on how ACDP can be integrated into the decision-making workflows used at the Ecuadorian Courthouses. It presents how ICT technologies, as well as AI, are used for decision making in the Ecuadorian courthouses, comparing to other countries, when necessary and only for illustrative purposes.

Moreover, the European Ethical Charter on artificial intelligence in the judicial system, issued by the European Commission for the Efficiency of Justice in December 2018 [38], emphasizes enhancing user autonomy with AI tools. It stresses the importance of justice professionals reviewing decisions and data freely, while users should receive transparent information about AI's role, their rights, and the option to object [39].

In Ecuador, digital filing platforms are based on ICT technologies, accessible from a webpage, and able to accept lawyers' electronic signature. This system allows petitions to be submitted via e-mail to an institutional account, which is then verified by a human operator, who checks the authenticity of the signature and the correct receipt of the e-mail. The results of this process are predictable, it includes human intervention at the beginning, when the attorney submits his electronic petition, and at the end, when the public servant validates the submission. Each step, and its status, is known by the Judges through the same platform.

In May 2020, the Plenary of the Judiciary Council releases the Resolution 045-2020 [40], which Article 2 states that electronically signed writs, needed within the cases being processed, may be uploaded to virtual windows (platforms) for the provision of the service of justice, enabled on the website of the Judicature Council and the National Court of Justice [41]. Nonetheless, it is necessary to question the validity of virtual copies uploaded to the platform, or any attachments sent by e-mails, given that in Ecuador there is still no electronic certification of notarized documents.

There exist risk profiling computational tools utilized for concurrent control, which construct models through a combination of fixed rules (Deterministic approach), statistical prediction methods (Probabilistic approach), and random methods to introduce unpredictability into decision-making processes. In Ecuador, various national entities, such as the National Customs Service of Ecuador (SENAE), employ this type of tools [42]. Certain limitations are raised, notably the incapacity to alter the risk profile of an individual due to the confidentiality of information contained within the databases utilized for profiling, even under the purview of Habeas Data. It is pertinent to clarify that individuals authorized to manage the system and its maintenance are legally constrained from divulging information pertaining to it. It is further observed that decisions made by the profiler are entirely autonomous.

Various jurisdictional policies aim to expedite decision-making processes by introducing new automatic and autonomous systems to facilitate access to effective judicial protection. In Brazil, an example of such a system is VICTOR, utilized by the Federal Supreme Court to analyze a vast number of filed appeals [10]. VICTOR identifies appeals meeting the criterion of 'general repercussion', indicating potential societal impact, by applying predefined thematic criteria and comparing them with the content of each appeal. It then selects appeals closely aligned with these criteria for further human review. Developed accuracy rates for VICTOR reached 90.34% in classifying appeals in 2018 [43].

Prometea, an autonomous system introduced by the Public Prosecutor's Office of the Autonomous City of Buenos Aires in 2017, plays a pivotal role in autonomous decision-making across various domains. This system generates draft decisions and engages justice operators through inquiries to finalize them [11]. It operates in two stages: first, as a virtual assistant leveraging artificial intelligence, and second, as a predictive assistant by scrutinizing previous case decisions and offering suggestions to justice operators for resolution. Notably, despite

the utilization of artificial intelligence, databases, and predictive tools, Prometea produces a decision draft subject to review and potential reform by the justice operator. Furthermore, it streamlines the analysis and confrontation of facts undertaken by judicial operators, thereby shaping the foundation of judicial motivation.

In Colombia, the Constitutional Court relies on Prometea as a benchmark system. PretorIA, an autonomous system, aids in selecting judicial decisions that warrant consideration by the court, thereby streamlining the admission process for cases [44], [45]. The integration of information technologies in judicial processes profoundly influences decision-making by judges and other justice operators [43]. Consequently, conducting periodic analyses of systems that autonomously utilize artificial intelligence or database management systems in decision-making tasks is crucial to preempting any issues that may arise and ensuring robust scrutiny by justice operators.

Hybrid models of remote work were necessitated, involving the utilization of information technologies through remote access programs and bolstering access systems to public entities via new technologies. In Ecuador, as previously noted, the computerized management of justice processes commenced around the year 2000; however, the significant momentum garnered in 2020 expedited objectives originally slated for long-term realization. These objectives include prioritizing the adoption of digital mediums for submitting pleadings and implementing electronic notifications for judicial decisions [46].

Legislation regarding electronic subpoenas has commenced, with the publication of Official Gazette S-517 on June 26, 2019, amending the General Organic Code of Proceedings [47]. Article 55 of this amendment introduces the concept of summons by electronic means. This development represents a significant advancement in facilitating telematic summons, streamlining cumbersome processes such as the letter rogatory for individuals residing abroad, or the deprecatory and commissions for those living outside the jurisdiction of the judge. However, despite the acknowledgment of receipt, communication via email, even with certified mail and confirmation of reading, may still encounter procedural complications, particularly in cases involving voluminous evidence or claims.

The Ministry of Telecommunications and the Information Society has implemented action plans aimed at ensuring 78% of mobile and fixed Internet penetration by 2025. Despite the institution reporting a 68% in 2022 [48], legal professionals encounter significant challenges in obtaining stable and high-quality connections necessary for conducting hearings through telematic applications. The pandemic has accelerated the adoption of telematic methods due to lockdown measures. However, the use of these methods poses challenges to the traditional paradigm of evidence presentation, which typically involves direct exhibition to the audience. Additionally, discrepancies between electronic and physical evidence

repositories, accessible to all parties and restricted to certain judicial personnel respectively, present logistical difficulties.

The National and Local Governments have promoted remote work among public servants and judges, emphasizing the utilization of telematics to conduct tasks without physical access to files [49]. Consequently, there has been a reinforcement of electronic filing systems, albeit previously in partial use. Presently, all documents are scanned and uploaded to these systems, enabling judges to access them remotely. However, challenges persist, particularly in cases involving bulky annexes or documents, not due to technical limitations in uploading to the system, but rather the time-consuming nature of this process, exacerbated by the absence of suitable automatic systems for managing large physical-to-digital document conversions. Similar issues arise with physical documents received through notarization or executive titles, as stipulated by Article 349 of the General Organic Code of Processes, mandating their original inclusion in lawsuits, with no room for correction in case of omission.

V. Focus Group

This section bases its execution on the qualitative research method. It presents an exploratory research organized bearing in mind the two different groups of people involved in the judicial system: Judges and attorneys. The sampling for this paper comes from the ten Judicial Units established for the City of Guayaquil: Civil, commercial and tenancy, Criminal, Labor, Domestic violence, Traffic, Penitentiary guarantees, Flagrancy, Tax Litigation, Administrative Litigation, and Family.

TABLE I
QUESTIONS FOR THE FOCUS GROUPS

Do the information and communication technologies contribute to enhancing court hearings and the whole decision-making process?
What impact do the automated court decision platforms have on obtaining effective judicial protection?
In what ways do the automated court decision platforms focus on contributing to a more unbiased judicial decision?
Is it possible to obtain a Justice based on equity and sound judgment through automated court decision platforms?

Because of the small number of participants, two focus groups were organized to collect the data: the first, comprised of one judge of each Judicial Unit; the second, considers one attorney per Judicial Unit. The experts had to answer a small questionnaire containing the questions presented in Table 1. The open-ended nature of the questions makes the data respond to the observational collection method. A content analysis is performed to comprehend the main concerns of judicial workers. The survey aims to tackle a fundamental issue: whether ACDPs compromise individuals' right to immediate access and mediation by judges or their access to effective judicial protection.

In general, for the first question, judicial workers are likely to support the implementation of ICTs to contribute to the enhancement of court hearings from a practical and technical point of view. Nonetheless, judges do not support its use for making court decisions. Either way, the two most relevant statements expressing their concerns have been transcribed, as follows:

"I affirm that information and communication technologies have played a crucial role in enhancing court hearings because of the easy access to legal documentation and the remote accessibility for all the parties involved. However, it's essential for me, the Judge, to make the court decision rather than relying solely on automated formats to ensure that legal judgments consider nuanced factors, preserve judicial discretion, and uphold the principles of fairness and justice tailored to each unique case."

"As an attorney, I have noticed various improvements in the judicial proceedings thanks to the use of information and communication technologies in the court cases, what have reduced the time that used to take the processes, increasing the efficiency of my work."

On the one hand, a few judges argue that ACDPs positively expedite judicial processes, against most of them express concerns about the potential negative impact on nuanced judgment and human empathy, affecting judicial protection. On the other hand, court attorneys highlight the efficiency and transparency benefits of such formats. Both groups acknowledge the efficiency gains while emphasizing the importance of preserving human judgment and empathy to ensure comprehensive and effective judicial protection.

For the third question, another attorney stated that: *"From my experience, automated court decision platforms reduce the judges' biases by applying consistent algorithms, ensuring impartiality in decision-making and minimizing the influence of subjective factors."*

While the judges collectively concur that: *"Automated court decision platforms lack the nuanced understanding and empathy essential for equitable justice, as they rely solely on predefined algorithms. These formats may overlook crucial contextual factors and fail to consider individual circumstances, undermining the principles of fairness and sound judgment essential for delivering true justice."* to answer the last question.

Testimonials like the previous ones are representative of the participants in the focus groups. The findings highlight the increasing adoption of ICTs in judicial access. Although the majority of partakers have positive remarks about the use of ICTs in the courthouses, most judges were very skeptical about the use ACDP in decision-making. They emphasize the need to examine the implications of integrating ACDP to the Justices of the Peace, assessing the impact on efficiency, accuracy, and access to justice. This extends beyond merely automating judicial processes and managing information to potentially resolving conflicts autonomously, devoid of direct human involvement.

VI. DISCUSSION

In the realm of law, particularly procedural law, adaptation to social transformations has historically been perceived as slow. However, the COVID-19 pandemic has highlighted the necessity for rapid adaptation even in traditionally rigid legal domains. Despite potential challenges, the emergence of novel circumstances requires swift responses. This necessitates the process of sound criticism, which involves evaluating legal evidence impartially and integrating it into the final resolution [13]. Sound criticism relies on judges' personal judgment, considering facts, rights, and evidence, and is crucial for ensuring fair outcomes [50].

The principle of intimate or free conviction, practiced in jurisdictions like Ecuador and Spain [51], emphasizes the collective assessment of evidentiary elements according to logical principles and personal judgment. International guidelines, such as the Bangalore Principles of Judicial Conduct [52], emphasize judges' social responsibility and the importance of public trust in the administration of law. Consequently, sound criticism requires judges to engage directly with their personalities, individuality, and moral principles [53], ultimately shaping justice guided by personal values rather than strict legal constraints (National Court of Justice of Ecuador, 2010).

While the concept of depersonalizing justice through automated intelligence has been proposed, challenges such as the lack of accountability and inherent biases remain. Unlike human judges, autonomous processes lack direct human intervention, complicating the assignment of responsibility for constitutional obligations. Moreover, the automation of evidence evaluation fails to address challenges related to sound criticism and the regulation of its application, as automated processes are rooted in human subjectivity.

Constitutional mandates emphasize the accountability of judges and administrative authorities for their actions and reasoning [14]. However, autonomous processes pose unique challenges regarding responsibility, as they lack direct human intervention. The concept of sole reliance on the law is cautioned against in Ecuador [54], highlighting the need for judges to exercise unrestricted judgment based on evidence scrutiny in individual cases. Automation of justice reintroduces similar concerns, as automated processes rely on information influenced by human subjectivity.

Transparency in motivations is crucial for democratic contribution and accountability in decision-making processes, necessitating the establishment of comprehensive systems of administrative responsibility. The automation of evidence

evaluation does not circumvent ethical and moral challenges inherent in achieving societal acceptance and upholding effective democracy within judicial resolutions [55].

The Principle of Immediacy within legal proceedings underscores the right of parties to be consistently heard by the judge, necessitating active involvement in directing hearings and ensuring ethical conduct [56], [57]. However, the rapid adoption of telematic methods due to the pandemic poses challenges to traditional evidence presentation paradigms, impacting the quality of information reception and interaction between parties and judges [58].

Mediation, now obligatory in all jurisdictional proceedings in Ecuador [47], offers a crucial procedural phase within due process, facilitating resolution through the reconciliation of parties' perspectives and claims. However, autonomous justice systems face challenges in ensuring adherence to legal and moral standards, particularly regarding honesty and fairness [59], [60].

International agreements like the Toronto Declaration [61] advocate for the adherence to ethical principles and human rights in the utilization of artificial intelligence for decision-making processes, emphasizing the importance of diversity and equity to prevent discrimination. Concerns also exist regarding the limitations of autonomous systems in effectively implementing positive discrimination and establishing empathetic connections with parties, especially in cases involving power imbalances.

Based on this section, it can be noticed that adapting legal systems to technological advancements presents both challenges and opportunities. While automation offers efficiency, it must be accompanied by mechanisms to ensure accountability, transparency, and adherence to ethical and moral standards. Therefore, when discussing mediation and conciliation, it becomes imperative to ensure the parties' access to the justice operator, namely the Judge, extending beyond the immediacy previously mentioned. This aspect must be accurately contextualized within the organic framework of justice, utilizing the principles of sound criticism to establish correlations between established facts and corresponding rights. Additionally, it mandates the explicit articulation of the rationale guiding the judge's decisions, devoid of any bias or partiality towards any party involved in the legal proceedings.

VII. CONCLUSION

Technological advancements and the integration of Information and Communication Technologies (ICTs) are pivotal in accessing Digital Judicial Protection, enhancing the efficiency, and effectiveness of justice institutions. These tools streamline case management, elevate information quality, and facilitate decision-making processes, bolstering the connection between justice entities and citizens. ICT systems automate legal document analysis and summarization, aiding legal professionals in extracting crucial insights promptly, while rule-based AI systems encode legal rules to aid in their application to specific cases. AI algorithms evaluate risks linked with legal decisions, particularly beneficial in due diligence processes. The incorporation of ICTs into case management systems enables seamless communication and data sharing, while advanced algorithms refine legal research for more precise outcomes [4]. AI systems prioritize ethical considerations to minimize biases, ensuring fair outcomes [5]. Proficiency in machine learning, natural language processing, and secure system integration is imperative for developing and sustaining these ICT applications. Continuous monitoring and updates are essential to adapt to evolving legal landscapes and uphold high standards of precision and impartiality. Integrating ICTs and AI in justice institutions shows potential in reducing case backlogs, enhancing legal service quality, and fostering a more accessible, efficient, and equitable legal system.

The necessity of timely access to jurisdiction and due process is paramount, highlighting the role of automated systems in streamlining bureaucratic procedures and handling extensive legal documentation efficiently. It's imperative that virtual justice assistance upholds fundamental rights, serving as benchmarks for the technical hurdles automated systems must overcome effectively. The progressive implementation of ICTs and AI, evident in sectors like the National Customs Service of Ecuador and the Colombian Constitutional Court, particularly in predictive systems, prompts scrutiny regarding their controversial use in judicial decision-making. This paper addresses this issue while recognizing the intrinsic data management aspect of judicial activities. Autonomous systems prove invaluable in analyzing vast data volumes, but caution against their unregulated application is warranted to ensure adherence to due process and effective judicial protection.

In addition, the impact of autonomous acts on judicial discretion, eliminating direct human involvement in decision-making, necessitates analysis due to their potential to render verdicts unpredictable [62]. While human intervention remains in system maintenance and data entry, the crux of legal argumentation lies in interpreting rules, facts, and human nuances, fostering discretion. Efforts like the Bangalore Rules aim to mitigate this discretion through autonomous system creation. However, concerns arise regarding the elimination of necessary discretion, exemplified by the Loomis case [63] and Ecuador's National Customs Service risk profiling tool, which determines individuals' danger levels without human intervention, potentially infringing on rights like the presumption of innocence. Such practices risk dehumanizing jurisprudence, leading to standardized sentences, and compromising the right to a fair trial, irrespective of legality or equity.

Furthermore, the testimonials provided by judicial workers underscore the growing adoption of ICTs in court proceedings, signaling a shift towards more technologically-driven processes. However, the skepticism expressed by most judges regarding the use of ACDPs for decision-making emphasizes the need for further examination of its implications. The integration of ACDPs should be approached cautiously,

considering its potential impact on efficiency, accuracy, and access to justice. Balancing the benefits of automation with the preservation of human judgment and empathy is essential to ensure comprehensive and effective judicial protection in the digital age.

In conclusion, the implementation of ACDP in Ecuador marks a significant advancement in judicial processes through Information and Communication Technologies (ICTs). These innovative tools have demonstrated their potential to streamline legal procedures, enhance efficiency, and improve access to justice for all citizens. By leveraging ICTs, Ecuador's judicial system can effectively manage caseloads, expedite proceedings, and ensure fair and equitable outcomes. As technology continues to evolve, embracing ACDP promises to further modernize and optimize Ecuador's legal framework, ultimately fostering a more transparent, accessible, and efficient justice system for the benefit of society as a whole.

Finally, while the present study sheds light on the potential of ACDPs to advance judicial processes in Ecuador, it is crucial to acknowledge the identified limitations. The small sample size, focused scope, and potential biases in participant responses underscore the need for further research to ensure comprehensive insights. Future studies should prioritize increasing sample sizes, diversifying geographic scope, and employing mixed methods approaches to address biases and enhance generalizability. Longitudinal and comparative studies, along with the incorporation of stakeholder perspectives and ethical considerations, are essential for a more nuanced understanding of ACDPs' impact on the judicial system. By embracing these recommendations, future research endeavors can contribute significantly to the ongoing discourse on leveraging Information and Communication Technologies (ICTs) to enhance judicial processes in Ecuador and beyond.

REFERENCES

[1]   Instituto de Estudios Comparados en Ciencias Penales y Sociales and Centro de Estudios de Justicia de las Américas, *Sistemas Judiciales - El rol de las Nuevas Tecnologías en el Sistema de Justicia*, 1st ed., vol. 9 (16). Santiago de Chile: CEJA, 2012. Accessed: Aug. 10, 2023. [Online]. Available: https://inecip.org/wp-content/uploads/Inecip-Sistemas-Judiciales-N%C2%BA-16.pdf

[2]   L. Wang, "Application of information technology in judicial field: The development model of online litigation in China," *Computer Law and Security Review*, vol. 52, Apr. 2024, doi: 10.1016/j.clsr.2024.105936.

[3]   A. Samacá González and R. Durán Vinazco, "Inteligencia Artificial Aplicada al Derecho," Universidad Santo Tomás, Bogotá, 2016. Accessed: Aug. 22, 2023. [Online]. Available: https://repository.usta.edu.co/bitstream/handle/11634/9376/Samacaandres2016.pdf?sequenc e=1&isAllowed=y

[4]   E. Battelli, "Robo-Decision: Algorithms, Legal Interpretation, Predictive Justice," *Revista de Derecho Privado*, no. 40, pp. 45–86, Jun. 2021, doi: 10.18601/01234366.n40.03.

[5]   S. Papagianneas and N. Junius, "Fairness and justice through automation in China's smart courts," *Computer Law and Security Review*, vol. 51, Nov. 2023, doi: 10.1016/j.clsr.2023.105897.

[6]   Consejo de la Judicatura, "Consejo de la Judicatura implementa el E-SATJE 2020, herramienta tecnológica que permite gestionar trámites judiciales en línea." Accessed: Nov. 19, 2023. [Online]. Available:

https://www.funcionjudicial.gob.ec/index.php/component/k2/item/9034-consejo-de-la-judicatura-implementa-el-e-satje-2020-herramienta-tecnol%C3%B3gica-que-permite-gestionar-tr%C3%A1mites-judiciales-en-l%C3%ADnea.html

[7]   V. De la A Maridueña and A. Álvarez Torres, "El derecho al olvido en el Sistema Informático Judicial Ecuatoriano," Universidad Católica de Santiago de Guayaquil, Guayaquil, 2017. Accessed: Jan. 19, 2024. [Online]. Available: http://repositorio.ucsg.edu.ec/handle/3317/8161

[8]   Consejo de la Judicatura, *De la Información Judicial Individual*. Ecuador: Pleno del Consejo de la Judicatura, 2015, pp. 1–4. Accessed: Jun. 30, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/resoluciones/318-2015.pdf

[9]   T. Sourdin, B. Li, and D. M. McNamara, "Court innovations and access to justice in times of crisis," *Health Policy Technol*, vol. 9, no. 4, pp. 447–453, Dec. 2020, doi: 10.1016/j.hlpt.2020.08.020.

[10]   V. C. Lima López Valle, J. R. Fuentes i Gasó, and A. Martins Ajus, "Judicial decision-making assisted by artificial intelligence and the Victor System of the Brazilian Federal Supreme Court," *Revista de Investigações Constitucionais*, vol. 10, no. 2, pp. 1–39, Aug. 2023, doi: 10.5380/rinc.v10i2.92598.

[11]   E. Estevez, S. Linares Lejarraga, and P. Fillottrani, *Transformando la administración de justicia con herramientas de inteligencia artificial*, 2020th ed. Washington: Inter-American Development Bank, 2020. Accessed: Sep. 12, 2023. [Online]. Available: https://publications.iadb.org/es/prometea-transformando-la-administracion-de-justicia-con-herramientas-de-inteligencia-artificial

[12]   Consejo de la Judicatura, *Formulario para presentación de demanda en procesos monitorios*. Quito, Ecuador: Pleno del Consejo de la Judicatura, 2021, pp. 1–2. Accessed: Sep. 01, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/FORMULARIO%20PROCESO%20MONITORIOL%20OK.pdf

[13]   A. Mora Bernal, M. Sánchez Sarmiento, A. Cajamarca Torres, and D. Idrovo Torres, "El sistema automático de trámite judicial en Ecuador: ¿vulnera derechos fundamentales?," *Revista Chilena de Derecho y Tecnología*, vol. 11, no. 1, pp. 203–228, Jun. 2022, Accessed: Feb. 20, 2024. [Online]. Available: https://rchdt.uchile.cl/index.php/RCHDT/article/view/61859

[14]   J. Cea Egaña, "Perfil Axiológico, Independencia y Responsabilidad del Juez Constitucional," *Ius et Praxis*, vol. 9, no. 2, pp. 1–7, 2003, Accessed: Sep. 22, 2023. [Online]. Available: https://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0718-00122003000200006&lng=en&nrm=iso&tlng=es

[15]   J. Alvarez-Cienfuegos Suárez, "Los Sistemas de Gestión Jurídica Automatizada: Aplicaciones Informáticas en el Ámbito de la Administración de Justicia," *Informática y Derecho*, vol. 2, no. 11, pp. 553–575, 1996, Accessed: Oct. 07, 2023. [Online]. Available: https://dialnet.unirioja.es/servlet/articulo?codigo=248786

[16]   Corte Nacional de Justicia, "Las nuevas tecnologías y la administración de justicia: ventajas, retos y limitaciones," *Gaceta Judicial - Diálogos judiciales*, Quito, pp. 1–204, Dec. 2020. Accessed: Sep. 26, 2023. [Online]. Available: https://www.cortenacional.gob.ec/cnj/images/Produccion_CNJ/Dialogos-7.pdf

[17]   H. C. Sung, "Can Online Courts Promote Access to Justice? A Case Study of the Internet Courts in China," *Computer Law and Security Review*, vol. 39, Nov. 2020, doi: 10.1016/j.clsr.2020.105461.

[18]   J. A. van Nispen *et al.*, "Thoracic Surgery Litigation: Analysis Using the Westlaw Legal Database," *Annals of Thoracic Surgery Short Reports*, Nov. 2023, doi: 10.1016/j.atssr.2023.11.005.

[19]   F. Vilson, M. Colaco, J. Gutierrez-Aceves, and R. Terlecki, "Factors Associated with Trial Outcomes in the Management of Nephrolithiasis: A Legal Database Review," *Urol Pract*, vol. 4, no. 6, pp. 473–478, Nov. 2017, doi: 10.1016/j.urpr.2016.11.006.

[20]   G. Rougereau, T. Marty-Diloy, G. Rougereau, P. Boisrenoult, and T. Langlais, "Litigation after hallux valgus surgery in France

between 2000 and 2020: A review of the two national legal research databases," *Foot and Ankle Surgery*, vol. 28, no. 4, pp. 497–502, Jun. 2022, doi: 10.1016/j.fas.2022.01.004.

[21] M. G. Porcedda, "Sentencing data-driven cybercrime. How data crime with cascading effects is tackled by UK courts," *Computer Law and Security Review*, vol. 48, Apr. 2023, doi: 10.1016/j.clsr.2023.105793.

[22] F. C. Cheng and W. H. Lai, "The impact of cloud computing technology on legal infrastructure within Internet - Focusing on the protection of information privacy," in *Procedia Engineering*, 2012, pp. 241–251. doi: 10.1016/j.proeng.2011.12.701.

[23] G. Martínez Bahena, "La inteligencia artificial y su aplicación al campo del Derecho," *Alegatos*, vol. 82, pp. 827–846, Feb. 2013, Accessed: Aug. 13, 2023. [Online]. Available: https://www.corteidh.or.cr/tablas/r30570.pdf

[24] V. Bellandi *et al.*, "An entity-centric approach to manage court judgments based on Natural Language Processing," *Computer Law and Security Review*, vol. 52, Apr. 2024, doi: 10.1016/j.clsr.2023.105904.

[25] D. Licari and G. Comandè, "ITALIAN-LEGAL-BERT models for improving natural language processing tasks in the Italian legal domain," *Computer Law and Security Review*, vol. 52, Apr. 2024, doi: 10.1016/j.clsr.2023.105908.

[26] E. Mumcuoğlu, C. E. Öztürk, H. M. Ozaktas, and A. Koç, "Natural language processing in law: Prediction of outcomes in the higher courts of Turkey," *Inf Process Manag*, vol. 58, no. 5, Sep. 2021, doi: 10.1016/j.ipm.2021.102684.

[27] F. de Arriba-Pérez, S. García-Méndez, F. J. González-Castaño, and J. González-González, "Explainable machine learning multi-label classification of Spanish legal judgements," *Journal of King Saud University - Computer and Information Sciences*, vol. 34, no. 10, pp. 10180–10192, Nov. 2022, doi: 10.1016/j.jksuci.2022.10.015.

[28] S. Sachan and X. Liu (Lisa), "Blockchain-based auditing of legal decisions supported by explainable AI and generative AI tools," *Eng Appl Artif Intell*, vol. 129, Mar. 2024, doi: 10.1016/j.engappai.2023.107666.

[29] F. C. Cheng and W. H. Lai, "The impact of cloud computing technology on legal infrastructure within Internet - Focusing on the protection of information privacy," in *Procedia Engineering*, 2012, pp. 241–251. doi: 10.1016/j.proeng.2011.12.701.

[30] E. Heeren-Moon, "Risk, reputation and responsibility: Cybersecurity and centralized data in United States civilian federal agencies," *Telecomm Policy*, vol. 47, no. 2, Mar. 2023, doi: 10.1016/j.telpol.2023.102502.

[31] V. Papakonstantinou, "Cybersecurity as praxis and as a state: The EU law path towards acknowledgement of a new right to cybersecurity?," *Computer Law and Security Review*, vol. 44, Apr. 2022, doi: 10.1016/j.clsr.2022.105653.

[32] S. Park, "Why information security law has been ineffective in addressing security vulnerabilities: Evidence from California data breach notifications and relevant court and government records," *Int Rev Law Econ*, vol. 58, pp. 132–145, Jun. 2019, doi: 10.1016/j.irle.2019.03.007.

[33] J. González-González, F. de Arriba-Pérez, S. García-Méndez, A. Busto-Castiñeira, and F. J. González-Castaño, "Automatic explanation of the classification of Spanish legal judgments in jurisdiction-dependent law categories with tree estimators," *Journal of King Saud University - Computer and Information Sciences*, vol. 35, no. 7, Jul. 2023, doi: 10.1016/j.jksuci.2023.101634.

[34] S. Sengupta and K. M. Annervaz, "Multi-site data distribution for disaster recovery - A planning framework," *Future Generation Computer Systems*, vol. 41, pp. 53–64, 2014, doi: 10.1016/j.future.2014.07.007.

[35] K. Wiedemann, "Profiling and (automated) decision-making under the GDPR: A two-step approach," *Computer Law and Security Review*, vol. 45, Jul. 2022, doi: 10.1016/j.clsr.2022.105662.

[36] J. Morillo Velasco, "La justicia electrónica en Ecuador: Desafíos para un cambio de paradigma," *Diálogos Judiciales*, vol. VII, no. Diciembre, pp. 57–70, Dec. 2020, Accessed: Aug. 31, 2023.

[Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/LA%20JUSTICIA%20ELECTR%C3%92NICA%20EN%20ECUADOR.pdf

[37] C. Castillo Jiménez, "Los Sistemas de Gestión Jurídica Automatizada," *Informática y Derecho*, vol. 2, no. 3.2, pp. 1571–1579, 1996, Accessed: Nov. 20, 2023. [Online]. Available: https://www.derechoinformatico.cl/revista-fiadi/revista12.html

[38] Commission européenne pour l'efficacité de la justice (CEPEJ), *European ethical Charter on the use of Artificial Intelligence in judicial systems and their environment*. Strasbourg, European Union: Council of Europe, 2018, pp. 1–79. Accessed: Sep. 24, 2023. [Online]. Available: https://www.europarl.europa.eu/cmsdata/196205/COUNCIL%20OF%20EUROPE%20-%20European%20Ethical%20Charter%20on%20the%20use%20of%20AI%20in%20judicial%20systems.pdf

[39] Commission européenne pour l'efficacité de la justice., *European judicial systems: Efficiency and quality of justice*, 2018th ed., vol. 26. Strasbourg: Council of Europe, 2018. Accessed: Nov. 01, 2023. [Online]. Available: https://eucrim.eu/news/cepej-2018-report-european-judicial-systems/#:~:text=On%204%20October%202018%2C%20the,systems%20of%2045%20European%20countries.

[40] Consejo de la Judicatura, *Restablecer parcialmente las actividades jurisdiccionales en la Corte Nacional de Justicia y en las Cortes Provinciales e implementar la ventanilla virtual*. Ecuador: Pleno del Consejo de la Judicatura, 2020, pp. 1–5. Accessed: Sep. 24, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/resoluciones/2020/045-2020.pdf

[41] Consejo de la Judicatura, *Ventanilla virtual para ingreso de escritos - Manual de usuario*. Ecuador: Pleno del Consejo de la Judicatura, 2020, pp. 1–16. Accessed: Oct. 28, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/CJ-Manual%20de%20Usuario-%20Ventanilla%20virtual%20para%20el%20ingreso%20de%20escritos.pdf

[42] Servicio Nacional de Aduana del Ecuador, *Reglamento para la aplicación de la herramienta informática de perfiles de riesgo*. Ecuador: SENAE, 2013, pp. 1–7. Accessed: Oct. 13, 2023. [Online]. Available: http://www.pudeleco.com/files/a17042e.pdf

[43] R. Urueña, "¿Máquinas de Justicia?: Inteligencia Artificial y Sistema Judicial en América Latina," Agenda Estado Derecho. Accessed: Oct. 16, 2023. [Online]. Available: https://agendaestadodederecho.com/maquinas-de-justicia-inteligencia-artificial-y-sistema-judicial-en-america-latina/

[44] V. Saavedra and J. C. Upegui, *PretorIA and automating the processing of human rights cases*, 2021st ed. Derechos Digitales - América Latina, 2021. Accessed: Aug. 27, 2023. [Online]. Available: https://www.derechosdigitales.org/wp-content/uploads/05_Informe-Colombia-EN_180222.pdf

[45] P. Rueda Saiz, "Docket Selection and Judicial Responsiveness: The Use of AI in the Colombian Constitutional Court," *William & Mary Bill of Rights Journal*, vol. 30, no. 2, pp. 418–453, Dec. 2021, Accessed: Aug. 10, 2023. [Online]. Available: https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=2000&context=wmborj

[46] Consejo de la Judicatura, *Notificaciones en casillero judicial electrónico*. Ecuador: Pleno del Consejo de la Judicatura, 2017, pp. 1–8. Accessed: Sep. 22, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/resoluciones/2017/150-2017.pdf

[47] Constitución de la República del Ecuador, *Código Orgánico General de Procesos*. Ecuador: Constitución de la República del Ecuador, 2021, pp. 74–75. Accessed: Aug. 18, 2023. [Online]. Available: https://www.defensa.gob.ec/wp-content/uploads/downloads/2021/03/COGEP_act_feb-2021.pdf

[48] Ministerio de Telecomunicaciones y de la Sociedad de la Información (MINTEL), "Plan de Servicio Universal 2022 - 2025,"

Quito, 2022. Accessed: Dec. 01, 2024. [Online]. Available: https://www.telecomunicaciones.gob.ec/wp-content/uploads/2022/06/plan_de_servicio_universal_2022-20250564678001655319190-1.pdf

[49] R. Amaguai, "Plan Operativo de la Dirección Nacional de Informática del Consejo de la Judicatura," Consejo de la Judicatura, Quito, Ecuador, 2015. Accessed: Nov. 30, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/informatica/PLANESTRATEGICOOPERATIVODNI-CJ.pdf

[50] N. Salamanca Giral, "La Libre Valoración Probatoria: Tres Perspectivas Históricas," Boletín Virtual del Departamento de Derecho Procesal - Universidad Externado de Colombia. Accessed: Nov. 20, 2023. [Online]. Available: https://procesal.uexternado.edu.co/la-libre-valoracion-probatoria-tres-perspectivas-historicas/

[51] B. Barrios González, "Teoría de la sana crítica," *REVISTA OPINIÓN JURÍDICA*, vol. 2, no. 3, pp. 99–128, Jun. 2003, Accessed: Dec. 20, 2023. [Online]. Available: https://revistas.udem.edu.co/index.php/opinion/article/view/1338

[52] Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC), "Los principios de Bangalore sobre la conducta judicial," Vienna, 2019. Accessed: Oct. 01, 2024. [Online]. Available: https://www.unodc.org/documents/ji/training/19-03891_S_ebook.pdf

[53] Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC), "Comentario relativo a los principios de Bangalore sobre la conducta judicial," Vienna, Sep. 2007. Accessed: Dec. 11, 2024. [Online]. Available: https://www.unodc.org/documents/corruption/Publications/2012/V1187384.pdf

[54] Presidencia de la República del Ecuador, *Código de Ética*. Ecuador: Registro Oficial Suplemento 205, 2014, pp. 1–40. Accessed: Nov. 25, 2023. [Online]. Available: https://www.presidencia.gob.ec/wp-content/uploads/2018/04/a3_4_SGPR-2014-0002_codigo_etica_mar_2018.pdf

[55] F. Vergara, *Código Orgánico de la Función Judicial*. Ecuador: Ley 0, 2009, pp. 8–9. Accessed: Aug. 16, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/normativa/codigo_organico_fj.pdf

[56] Consejo de la Judicatura, *Instructivo de manejo de Audiencias del Procedimiento Directo previsto en el Código Orgánico Integral Penal*. Ecuador: Pleno del Consejo de la Judicatura, 2014, pp. 1–4. Accessed: Sep. 10, 2023. [Online]. Available: https://dialnet.unirioja.es/descarga/articulo/7927014.pdf

[57] Consejo de la Judicatura, *Informe Técnico y modelo de Gestión para las Unidades Judiciales de Primer Nivel*. Ecuador: Pleno del Consejo de la Judicatura, 2014, pp. 1–26. Accessed: Sep. 10, 2023. [Online]. Available: https://www.funcionjudicial.gob.ec/www/pdf/resoluciones/2014cj/003-2014.pdf

[58] C. Bustamante-Segovia, "La inmediación procesal en el Ecuador," *Polo del Conocimiento*, vol. 6, no. 4, pp. 199–216, Apr. 2021, Accessed: Aug. 19, 2023. [Online]. Available: https://dialnet.unirioja.es/descarga/articulo/7927014.pdf

[59] E. Criado Carbonell, "La empatía en una Inteligencia artificial," Empatiaeia. Accessed: Dec. 16, 2023. [Online]. Available: https://www.empatiaeia.com/la-empatia-en-inteligencia-artificial/

[60] R. De Asís, "Inteligencia artificial y derechos humanos," *Materiales de Filosofía del Derecho*, vol. 4, 2020, Accessed: Aug. 15, 2023. [Online]. Available: https://e-archivo.uc3m.es/bitstream/handle/10016/30453/WF-20-04.pdf?sequence=1

[61] A. Bacciarelli, J. Westby, E. Massé, D. Mitnick, and F. Hidvegi, "The Toronto Declaration: Protecting the right to equality and non-discrimination in machine learning systems Preamble," Toronto, May 2018. Accessed: Oct. 20, 2023. [Online]. Available: https://www.torontodeclaration.org/declaration-text/english/

[62] A. Banafa, "¿Qué es la informática autónoma?," Tecnología: Mundo Digital. Accessed: Sep. 13, 2023. [Online]. Available: https://www.bbvaopenmind.com/tecnologia/mundo-digital/que-es-la-informatica-autonoma/#:~:text=La%20inform%C3%A1tica%20aut%C3%B3noma%20es%20la,y%20efectuar%20otras%20tareas%20de

[63] S. L. Horne, *State of Wisconsin, Plaintiff-Respondent, v. Eric L. Loomis, Defendant-Appellant. ON CERTIFICATION FROM THE COURT OF APPEALS*. La Crosse: Supreme Court of Wisconsin, 2016, pp. 1–67. [Online]. Available: http://www.americanbar.org/content/dam/aba/administrative/crimin