

**A VISION FOR DIGITIZING JUDICIAL PROCESSES AND
INTEGRATING ARTIFICIAL INTELLIGENCE IN PAKISTAN’S
JUDICIARY:
ENHANCING EFFICIENCY AND UPHOLDING JUDICIAL
INTEGRITY**

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Abstract: The judiciary, as the cornerstone of justice and the rule of law, is at a pivotal juncture to harness the transformative power of digital technology and artificial intelligence (AI) to enhance its operations. This essay outlines a comprehensive approach for digitizing judicial processes in Pakistan, incorporating AI integration by drawing parallels with successful international model. The focus is on the need for systemic change to ensure efficiency, transparency, and accessibility in the legal system. Current challenges include a lack of proper implementation of the rule of law, prolonged trials, and low public confidence. Traditional methods of case filing are manual and paper-based, leading to inefficiencies. The essay proposes a step-by-step transformation starting from e-filing to the digitization of the entire lifecycle of a case, aiming to modernize Pakistan's judiciary. AI can aid in legal research, evidence standards, and sentencing, offering predictive capabilities and streamlining routine case management. Ethical considerations and the need for human judicial discretion are emphasized to balance AI's assistance with maintaining judicial integrity and fairness. This digital transformation can restore public trust and efficiency in Pakistan's judiciary, paving the way for a modern, digital legal system.

Keywords: Technological Integration in Courts, Predictive Analytics in Law, Transparency in Judicial Processes, Judicial Modernization, Artificial Intelligence in Judiciary, Digital transformation, AI and Legal Ethics, Case Management Systems, E-Filing, Legal Tech Innovation, AI in Legal Research, Efficiency in Judiciary, AI and Evidence Standards, AI in Sentencing, Legal Information Systems

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Table of Contents

Introduction	110
I. Current Challenges in Pakistan’s Judiciary	110
II. Traditional Case Filing Methods	110
III. The Need for Digital Transformation	111
IV. Integration of AI in Judicial Processes	112
V. AI in Legal Research and Decision-Making	112
VI. AI in Sentencing and Evidence Standards	112
VII. AI in Routine Case Management	113
VIII. The Chinese Model of Smart Courts	115
A. Historical Development	115
B. Initiatives For the Transformation	116
C. Procedure of the Courts	117
IX. Ethical Standards and Transparency	117
X. Practical Considerations for Judicial Use of AI	118
XI. Strategic Roadmap for Transforming Pakistan’s Judicial System Inspired by the Chinese Model of Smart Courts	119
Phase 1: Foundational Assessment and Strategic Planning	119
Phase 2: Technology Integration in Judicial Processes	119
Phase 3: Enhancing Judicial Transparency and Efficiency	120
Phase 4: Scaling and Integrating Advanced Technologies	120
Phase 5: Continuous Improvement and Innovation	121
Conclusion	121

INTRODUCTION

No society may be esteemed an ideal civilization, unless it venerates and abides by the laws. The rule of law may only be established when the populace holds unwavering faith in the sanctity and rectitude of law. Moreover, the public must be so instructed that they comport themselves according to the law without coercion. Whilst all pillars of the state hold significant import, the judiciary is preeminent in its charge of dispensing justice. Justice, in its most unadorned form, signifies the rightful placement of all things. The judicial institution serves as the vigilant sentinel, ensuring none are met with injustice.

I. CURRENT CHALLENGES IN PAKISTAN'S JUDICIARY

In our realm, due to the lack of proper implementation of the rule of law and the protracted nature of trials, litigants have lost faith in the judicial apparatus, and are often compelled to settle disputes or chastise wrongdoers outside the bounds of court, rather than endure interminable waits for adjudication. Rectifying these deficiencies will augment the populace's access to and confidence in the courts, thus disrupting the cycle of mistrust and apathy towards the judiciary, and aiding the judiciary in reclaiming its esteem.

The judiciary faces significant challenges as reflected in the 2023 World Justice Project (WJP) Rule of Law Index, where it ranks 130th out of 142 countries. The country shows weak checks and balances on the executive branch by the judiciary and legislature, leading to significant executive overreach and limited accountability. Corruption is pervasive, affecting the judiciary, police, and public services, with ineffective anti-corruption measures in place. Transparency and accessibility of government operations are limited, with insufficient publicized laws and poor civic participation. Fundamental rights, including freedoms of speech, assembly, and association, are inadequately protected, and human rights violations are common. Despite some improvements in security, issues such as terrorism, violence, and crime persist, impacting the overall law and order situation. The civil justice system is plagued by delays, inefficiency, high case backlogs, and procedural complexities, which undermine public trust. The criminal justice system also faces significant issues, including inadequate protection of due process, prolonged pre-trial detentions, and poor prison conditions, leading to low public confidence.¹ The number of judges serving is around 4200 including superior judiciary to handle the backlog of 2.1 million cases.²

II. TRADITIONAL CASE FILING METHODS

Traditional or obsolete methods of case filing, which are largely manual and paper-based, still exist in Pakistan. Lawyers or individuals involved in the case prepare necessary legal documents manually. Once the documents are prepared, the litigant often needs to be verified through the biometric system of NADRA. The next step involves physically submitting these documents to the court's registry or filing office. The person filing the case would need to go to the court, often waiting in long lines for

¹ World Justice Project, WJP Rule of Law Index 2023, <https://worldjusticeproject.org/our-work/research-and-data/wjp-rule-law-index-2023> (last visited June 16, 2024).

² Law & Justice Commission of Pakistan and National Judicial Policy Making Committee, Judicial Statistics of Pakistan 2022 (2022).

their turn to submit their documents to the filing clerk. After the case is filed, notifications are sent out manually to the parties involved in the case, often via postal mail, informing them of the case details, court dates, etc. While online notices have begun to be issued, they are not being totally disseminated through official accounts or numbers. Accessing case files or past records require physically going to the court and requesting to view the files, which are stored in large filing cabinets or rooms dedicated to archives. The current process required for a lawyer to obtain a certified copy of a case file or order involves a tedious and inefficient system where documents are manually searched, transported, and copied, involving multiple departments and requiring physical presence and payments at various stages. This manual method is time-consuming, labor-intensive, and susceptible to issues like loss of documents, delays, and lack of transparency.

III. THE NEED FOR DIGITAL TRANSFORMATION

Modern judicial systems are increasingly moving towards not only electronic filing (e-filing) systems but to robotic courts which streamline these processes, reduce paper use, improve efficiency and accessibility as well as retain the capability to handle the case backlog.³ The advanced issues with respect to robotic courts like unpredictability, complexity and legal personhood are under discussion. Emergent behavior in AI systems, where they exhibit actions not explicitly programmed due to learning from vast amounts of data, can lead to unforeseen outcomes. It is debated that such unpredictability makes it difficult to determine responsibility when AI causes harm or violates laws, as traditional liability frameworks based on foreseeability are mostly inadequate. Alongside AI systems are often collaboratively developed by multiple entities, complicating the assignment of causality and responsibility for failures or harmful actions. There is another ongoing debate on whether AI should be granted legal personhood to simplify liability issues, making the AI itself responsible. Proponents suggest new standards for foreseeability and accountability, and mechanisms to hold multiple parties jointly responsible when their contributions lead to harm.⁴

Reverting to the aspect of modernization of judiciary in the country, the necessary technology and human resources for the digitization and AI integration, to some extent are already available. The tasks outlined can be achieved in a relatively short timeframe, paving the way for a more profound transformation towards a modern, digital judiciary. This journey must begin with a step-by-step transformation of each judicial process, starting from e-filing to the digitization of the entire lifecycle of a case. Allowing digitally uploading petitions along with Computerized National Identity Cards (CNICs), biometric data, and photo identity are similar to the process already in place for online passport renewals for the Pakistani diaspora. All court documents and records shall then be integrated into a central database. Lawyers or litigants could access and download needed documents through a secure online system after

³ Celine Cousineau, Smart Courts and the Push for Technological Innovation in China's Judicial System, CSIS (Apr. 15, 2021), <https://www.csis.org/blogs/new-perspectives-asia/smart-courts-and-push-technological-innovation-chinas-judicial-system>. (Last visited June 05, 2024).

⁴ P.W. Grimm, M.R. Grossman, S. Gless, & M. Hildebrandt, Artificial Justice: The Quandary of AI in the Courtroom, *Judicature Int'l* (Sept. 2022).

undergoing necessary checks and electronic payment, thereby reducing the turnaround time from days to minutes.⁵

IV. INTEGRATION OF AI IN JUDICIAL PROCESSES

This digital transformation will also lay the groundwork for integrating artificial intelligence (AI) into the field. Currently, the technology's potential to benefit the judicial system is untapped due to the absence of such modernization. The technology could facilitate by sifting through an immense corpus of legal documents, including statutes, case law, and secondary sources, at a pace and with a level of accuracy that far exceeds human capabilities. It could also be used for summarizing and comparing texts. AI-driven analysis can flag inconsistencies or fallacies in argumentation, contradictions in witness testimonies or flaws in the application of legal principles.⁶

V. AI IN LEGAL RESEARCH AND DECISION-MAKING

By utilizing natural language processing, AI can interpret the query of a judge and return pertinent information, drawing from a wide range of jurisdictions and legal systems. This ensures that judicial decisions are based on the most recent and relevant legal precedents. For instance, AI-powered legal research tools can analyze the fact patterns of a case and identify analogous cases across numerous jurisdictions, as well as highlight seminal cases that have significantly influenced the interpretation of specific laws. This gives judges comprehensive insights into the legislative framework and judicial reasoning. AI systems can also track changes in legal trends, societal norms, and judicial interpretations over time. By identifying shifts in how courts are interpreting laws and applying precedents, AI can help signal when a precedent may need to be revisited or reconsidered, thus maintaining the balance between stability and evolution.

The predictive capabilities of AI can yield tentative forecasts about the outcomes of litigation based on historical data and mining patterns from a vast array of similar cases. While no algorithm can guarantee the result of a legal case due to the myriad variables and the intrinsic unpredictability of law, AI can nonetheless unearth statistical trends that may offer judges substantive insights. Judges can then employ these predictions to weigh the purported strengths of arguments, to inform their understanding of how similar cases have been adjudicated, and to gain a preliminary sense of the likely direction a current case may take.

However, this functionality requires access to legal decisions that are often behind firewalls and not publicly available. There needs to be a shift in how legal judgments are accessed, removing barriers to make these important resources part of the machine learning dataset. This step is crucial for the advancement and efficacy of AI tools like Judge GPT in the judicial system.

VI. AI IN SENTENCING AND EVIDENCE STANDARDS

Formulating evidence standards with the help of AI could be particularly beneficial in adjudicating cases. Leveraging AI to adhere to these standards can

⁵ . Naeem Sadiq & Zulfiqar Ali Qureshi, *The Express Tribune*, Feb. 15, 2023.

⁶ . J. Shafiq, H.M.S. Shafiq, & M.S. Sarwar, *Use of ICTs and Artificial Intelligence to Overcome Judicial Trial Delays in Pakistani Courts*, 6 *Pakistan Lang. & Humanities Rev.* 1153 (2022).

significantly enhance the verification and comparison processes. AI can systematically ensure that evidence meets the required standards by excluding defective evidence, which may be unreliable or irrelevant, and illegal evidence, which could compromise the integrity of legal proceedings. By automating these checks, AI minimizes the risk of human error and bias. Additionally, AI can help safeguard the process from external interference, ensuring that the evidence remains uncontaminated and that the evaluation process remains fair and objective. This technological approach not only streamlines the evidentiary process but also upholds the principles of justice and accuracy in legal and investigative contexts.⁷

Sentencing is among the most challenging tasks a judge faces, requiring a balance between legal guidelines, the severity of the offense, and mitigating or aggravating factors. The strictness of sentencing can also differ according to a judge's choices, which can in turn depend on their nature, social values and experiences. Some judges prefer minimum punishment while others deem the maximum term as appropriate. AI can aid in navigating this complexity by churning through data to deliver evidence-based recommendations on sentencing. By accounting for an array of considerations, such as the nature of the crime, prior convictions, the accused's background, and vast sentencing records, AI algorithms can help ensure consistent and equitable sentencing practices. Determining the likelihood of recidivism is a key component in decisions related to bail, parole, and sentencing, thus AI can play a crucial role by evaluating myriad variables to assess the risk a particular individual might pose if afforded certain freedoms. Utilizing data points from past behavior, social and demographic predictors, and comparison with historically similar individuals, AI provides an evidence-based framework for these assessments.⁸

VII. AI IN ROUTINE CASE MANAGEMENT

Yet there is another aspect to be benefitted from the technology. Many judgments such as default rulings and declarations of inadmissibility are generated in routine manner in a court. Numerous cases require a straightforward evaluation without a formal hearing, and others are resolved through settlements. It is only a minor fraction of the cases that present complex and contentious issues. It is essential to acknowledge that the judicial process, and consequently the requirement for information technology, is not uniform across all cases. A considerable number of routine cases feature predictable outcomes. In such instances, the court's ruling could be a document produced predominantly through an automated process, based on the data submitted. Here, courts could typically receive digital submissions, whereby the presenting party supplies data electronically, thus obviating the need for manual re-entry. The processing of these cases could be partially or even fully automated using artificial intelligence, precisely because the outcome is largely or entirely determinable in advance. Thus the human input could be avoided and a robotic procedure could curb the burden from the institution.⁹ In our system, orders in family cases, rent disputes, bail applications, succession applications and several others could be generated from

⁷ Gulimila Aini, A Summary of the Research on the Judicial Application of Artificial Intelligence, 9 Chinese Stud. 14 (2020), <https://doi.org/10.4236/chnstd.2020.91002>.

U.S. Tahura & N. Selvadurai, The Use of Artificial Intelligence in Judicial Decision-Making: The Example of China, Int'l J.L., Ethics & Tech. (2022), <https://doi.org/10.55574/PYEB5374>.

⁸ Gulimila Aini, *Supra note 7*.

⁹A.D. (Dory) Reiling, Courts and Artificial Intelligence, 11 Int'l J. for Ct. Admin. 8 (2020), <https://doi.org/10.36745/ijca.343>.

AI automated setup. These Chatboats could be useful even in alternate dispute resolution.

Yet there is another aspect to ponder, the nature of the "mental process" involved in artificial intelligence systems differs markedly from the cognitive process of human beings. A mental process is a prerequisite for a legally effective decision, which a computer system inherently lacks. While AI systems do undertake a form of mental process, characterized by a "neural network," this process involves two distinct phases: first, a learning phase where data sets are gathered and trained, and second, an application phase where the system applies what it has learned. AI systems exhibit "intelligent behavior" by analyzing their environment and acting with some degree of autonomy to achieve specific goals. Despite these capabilities, while applying the technology in judicial process, it is to be kept in mind that the judicial functions require human intelligence, the ability to interact with compassion, emotion, and agile responsiveness—qualities that computer programs, to date, have not replicated. Thus, while AI can assist in certain tasks, certainly not an ultimate decision maker, the nuanced and empathetic decision-making essential to judicial roles remains uniquely human.¹⁰

AI decision-making systems render decisions by seeking similarities in case facts, whereas human judges consider each case on an independent basis. In AI automated setup independence of a judge could be compromised by the combined intentions of programmers, software engineers, information technology companies, and other entities.¹¹ The debate also persists on whether AI can be a legal personality bearing rights and obligations. The mental process of human decision-makers and AI systems also differs in the scope of the material considered and the relevant temporal parameters. In human decision-making, judges have access only to the client's legal data. In contrast, AI decision-making systems have access to all data entered by programmers and analysts, in addition to what is available to the judge. Moreover, while human judges consider both past and future events, AI judging largely depends on past events as embodied in the data sets used to train the AI system. In some cases, a formulated algorithm based on past events may not suffice to address the matters before the decision-maker. AI searches data to identify patterns to predict outcomes. Unlike AI, a human judge can be persuaded through reasoned legal argument. Arguably, AI cannot mimic general human cognition and intelligence, while humans often understand intents, emotions, and implied assumptions.¹²

Thus, AI can be a useful adjunct to the human decision-making process through the analysis of big data. It can be designed to handle simple matters independently. However, in complex matters demanding social values and choice, it is prudent to employ AI as an assisting tool to human decision-makers, rather than as independent arbiters.

In order to serve these purposes, it is imperative that knowledge map for the premise of AI is constructed in a manner which demands high standards in terms of data quality, model sophistication, and the granularity of knowledge, even for relatively

¹⁰ Gulimila Aini, *Supra note 7*.

¹¹ M.M. Rahman, Should I Be Scared of Artificial Intelligence? *Academia Letters*, Art. 2536 (2021), <https://doi.org/10.20935/AL2536>. (Last visited May 30, 2024).

¹² Gulimila Aini, *Supra note 7*.

straightforward cases. The required level of detail in a knowledge map is considerable. The construction process involves case handlers meticulously labeling each element, a task that is both time-consuming and labor-intensive.¹³ Furthermore, the complexity of legal language, adhering to the principle of *stare decisis* poses additional challenges. Creating a highly accurate knowledge map that faithfully captures the nuances of the case and the judge's rationale is, therefore, a daunting task.

From a logistical standpoint, AI systems adeptly handle the complexities of case management, streamlining the judicial workflow. Such systems can track the progression of cases, notify judges of upcoming deadlines, schedule proceedings, and even offer recommendations for suitable allocation of cases to different judges based on expertise and current workload.

VIII. THE CHINESE MODEL OF SMART COURTS

China being global leader, has made swift advancement in integrating legal technology into its judicial sector, driven by a higher trust in AI in East Asia compared to Western countries, and the need to address disparity between the growing number of cases and deficient workforce. This has led to the development of "smart courts" using advanced technologies such as AI, cloud computing, and big data.

A. Historical Development

Concerns about vulnerable populations and equitable access to justice prompted a focus on technological advancements. Thus the "intelligent" modernization of courts through information technology was intended to make judicial functions more transparent, efficient, and centered on people. Given the growing number of internet users in the country, technological convenience was believed to enhance judicial processes and substantially lower the costs related to accessing justice. The transformation of China's court system into 'smart' courts began in the 1990s. The significant focus was on using technology to address judicial administration challenges, moving from handwritten to word-processed documents, and setting the stage for future online filing systems. In 1997, the SPC emphasized that traditional handwritten court files could no longer meet the needs of increasing case numbers, necessitating the shift to computerized systems. This reform phase centered on digitizing court files and case management documents. According to the first Five-Year Reform Outline of People's Courts (1999-2003), all courts were expected to digitize their files by the end of 2001 and complete a nationwide internet network by 2003 to enhance judicial administration.¹⁴

In 2014, Chief Justice Qiang Zhou urged all Chinese courts to leverage technology to enhance the justice system, promoting public experiences of 'fairness' and 'justice' through judicial transparency. This included measures like uploading judgments online and livestreaming court hearings.¹⁵

¹³ Gulimila Aini, *Supra note 7*.

¹⁴ Qi Zhou, Guanyin Yanzhong Fayuan de Bianqian (光阴眼中法院的变迁) [The Changes of Courts in the Eyes of Time], Renmin Fayuanbao (人民法院报) [People's Court Daily], Sept. 1, 2018, 4:51 PM, <https://www.chinacourt.org/article/detail/2018/09/id/3482084.shtml>. (Last visited June 26, 2024)

¹⁵ Changqing Shi, Tania Sourdin & Bin Li, The Smart Court – A New Pathway to Justice in China?, 12 Int'l J. for Ct. Admin. 4 (2021), <https://doi.org/10.36745/ijca.367>.

B. Initiatives for the Transformation

The phase of the transformation of China's courts, from 2004 to 2013, was characterised by the introduction of internet-assisted court hearings. Computing and internet technologies were utilised for case management and hearings during this period. Along with the emergence of internet-assisted trials in the early 2000s, hearing activities began to be recorded using audio and video technology. This stage of transformation was prompted by the Supreme People's Court (SPC) in response to justice reform specified task for courts to accomplish in the second Five-Year Reform Outline of People's Courts (2004–2008).¹⁶ During this period, judicial transparency was significantly enhanced by livestreaming court hearings to the public. In September 2009, the Beijing High People's Court announced the launch of a city-wide livestreaming website, allowing the general public throughout the country to simultaneously watch hearings in any Beijing court. Similarly, in March 2010, the High People's Court of Henan Province in Central China reported conducting its first livestreamed hearing reflecting its commitment to improve the openness and transparency of the justice system.¹⁷ Regulating live stream hearing was a significant task in the third Five-Year Reform Outline of People's Courts (2009-2013) also.¹⁸

In 2017, one year after the 'smart court' concept was officially introduced, President Xi Jinping called for the integration of modern science and technology into judicial reforms. This initiative aimed to support the development of socialism with Chinese characteristics. By 2017, it was recognised by China's executive leadership that modernising the courts required the infusion of advanced technology. The most recent Five-Year Reform Outline of People's Courts (2019-2023) confirmed that one of the ten primary objectives of justice reform is to comprehensively advance the construction of smart courts. The Supreme People's Court (SPC) has identified specific measures to achieve this goal, including the use of AI technologies, enhancements in voice-to-text applications during hearings, and the implementation of intelligent auxiliary case management systems.¹⁹ As part of China's strategy to digitize judicial services, the Hangzhou Internet Court was established in August 2017 in Zhejiang Province, home to Alibaba's headquarters. This court handles internet-related cases, such as online shopping disputes, through its online platform. The platform allows for complete digital

¹⁶ Y. Chen, The Supreme Court Issued the 25th Five-Year Reform Outline, People's Court News, Oct. 28, 2005, <http://www.china-judge.com/ReadNews.asp?NewsID=3280&BigClassName=%CB%BE%B7%A8%B8%C4%B8%EF&BigClassID=17&SmallClassID=25&SmallClassName=%CB%BE%B7%A8%B8%C4%B8%EF&SpecialID=0>. (Last visited June 27, 2024)

¹⁷ Sina News, Beijing High People's Court Now Livestreaming Court Hearings, Sina News (Sept. 17, 2009), <http://news.sina.com.cn/c/2009-09-17/065816311211s.shtml>. (Last visited June 27, 2024)
Central Government Portal, Henan Conducts the First Court Trial Webcast to Further Promote Judicial Justice, Central Gov't Portal (Mar. 11, 2010), http://www.gov.cn/gzdt/2010-03/11/content_1553005.htm. (Last visited June 27, 2024)

¹⁸ China News, An Analysis of 10 Key Words in the People's Court's Three-Five Year Reform Outline, China News (Mar. 26, 2009), <http://www.chinanews.com/gn/news/2009/03-26/1618736.shtml>. (Last visited June 27, 2024)

¹⁹ Xinhua News Agency, Unswervingly Advance Judicial Reform and Take the Road of Socialist Rule of Law with Chinese Characteristics-General Secretary Xi Jinping's Important Instructions on Judicial System Reform Aroused Enthusiastic Responses, Xinhua News Agency (July 11, 2017), http://www.xinhuanet.com/politics/2017-07/11/c_1121302631.htm. (Last visited June 27, 2024)
The Paper, The Full Text of the Supreme Court's "Fifth Five-Year Reform Outline" | Authoritative Interpretation, The Paper (Feb. 27, 2019), https://www.thepaper.cn/newsDetail_forward_3051310. (Last visited June 27, 2024)

judicial proceedings, from case filing and document serving to evidence exchange, online hearings, and judgment delivery.²⁰

C. Procedure of the Courts

Key smart courts, as referred above utilize AI to streamline case management, reduce delays, and cut costs. These courts are interconnected through a national e-evidence platform based on blockchain, which supports evidence authentication and examination. The AI-driven processes begin with electronic filing, where pleadings and relevant materials are scanned to produce electronic files. During trials, AI tools facilitate examination and cross-examination, with synchronized transcription converting vocal evidence into written legal language. AI also assists in judicial decision-making by extracting information from legal texts to provide frameworks for judgment generation and sentencing prediction. The "automatic reason-generation" framework helps maintain decision consistency by matching relevant laws to facts and generating "reasons for judgment." This framework aims to speed up evidence submission, transfer of case files, and enhance access to justice.²¹ This advancement led to the development and deployment of 'Wise Judge' ('Rui Fa Guan' in Chinese) system, relying on nationwide judgment data drawn from China Judgments Online.²² In July 2017, China's State Council unveiled the 'New Generation Artificial Intelligence Development Plan' (新一代人工智能发展规划), which sets forth the country's strategy for advancing artificial intelligence (AI). This plan articulates China's ambitions to become the global leader in AI by 2030, transform AI into a trillion-yuan (approximately 150 billion dollars) industry, and take the lead in establishing ethical norms and standards for AI.²³

IX. ETHICAL STANDARDS AND TRANSPARENCY

As discussed, transparency and fundamental rights globally are regulated through setting ethical standards for judicial AI. These standards have been developed, engaging legal scholars, ethicists, technologists, policymakers, and international bodies. Key contributors include bodies such as the European Union, United Nations, and OECD. UNESCO has also made significant contributions through its AI ethics recommendations.

They make sure that handling of judicial decisions and data must pursue well-defined objectives, strictly adhering to the fundamental rights enshrined in the respective jurisdictions of the countries developing the system as well as right of protection of personal data. When artificial intelligence instruments are employed to adjudicate disputes, assist in judicial decision-making, or provide guidance to the public,

²⁰ Official Webpage of Hangzhou Internet Court, <https://www.netcourt.gov.cn/> (Last visited June 27, 2024).

²¹ Celine Cousineau, *Supra note 3*.

U. Ahmed, Z. Fatima, & T. Abbas, Implementing Artificial Intelligence (AI) into the Judicial System in Europe: Challenges and Opportunities, 8 *Pakistan Soc. Sci. Rev.* (Jan.-Mar. 2024).

²² In July 2020, the Supreme People's Court (SPC) issued the Guiding Opinions Concerning Strengthening Search for Similar Cases to Unify the Application of Law, aiming to guide judges in using principles derived from prior cases to fill gaps in legislation and judicial interpretations.

²³ Roberts, Huw & Cows, Josh & Morley, Jessica & Taddeo, Mariarosaria & Wang, Vincent & Floridi, Luciano. The Chinese Approach to Artificial Intelligence: An Analysis of Policy, Ethics, and Regulation, 36 *AI & Society* 10 (2021), <https://doi.org/10.1007/s00146-020-00992-2>.

it is of paramount importance to ensure that these instruments do not erode the guarantees of the right of access to a judge and the right to a fair trial, including the principle of equality of arms and the respect for the adversarial process. These tools must be employed with full regard for the principles of the rule of law and the autonomy of judges in their adjudicative functions. Consequently, ethical-by-design or human-rights-by-design methodologies should be favoured. This entails that, from the earliest stages of design and development, measures are integrated to preclude any direct or indirect transgressions of the fundamental values.

Given the capability of the technology to identify discrimination through data classification, stakeholders must ensure these methods do not perpetuate or worsen biases, nor lead to deterministic interpretations. Special care is required during development and implementation, especially with "sensitive" data like racial or ethnic origins, socio-economic status, political views, religious beliefs, trade union memberships, genetic and biometric data, health information, or sexual orientation. Upon detecting discrimination, corrective actions should be taken to mitigate or neutralize these risks, alongside raising stakeholder awareness.

Designers of machine learning models should leverage the expertise of relevant justice system professionals, such as judges, prosecutors, lawyers, and scholars in law and social sciences, including economists, sociologists, and philosophers. Data derived from judicial decisions and entered into machine learning software should come from certified sources and remain unmodified until used by the learning mechanism, ensuring the process is traceable and the content and meaning of the decisions are preserved.

One approach is to ensure complete technical transparency, such as through open-source code and documentation, however, this may be limited by trade secret protections. Independent authorities or experts could be responsible for certifying and auditing these processing methods or providing preliminary advice. Public authorities could issue certifications, subject to regular review. When implementing any artificial intelligence-based information system, it is also essential to provide computer literacy programs for users and facilitate discussions involving justice system professionals.²⁴

X. PRACTICAL CONSIDERATIONS FOR JUDICIAL USE OF AI

Judicial office holders also must pay close attention to certain issues while using AI in their routine work. They should not enter private or confidential information into public AI chatboat. AI chatboats remember inputs and can use them for future responses. Chat history in AI chatboats is to be disabled when possible. Permissions for AI apps that request access to device information are to be refused. Verify the accuracy of AI-generated information before using it. They need to be Aware of Bias. Work devices and work email addresses should be used for AI tools.²⁵

While AI's ability to process information at high speed is invaluable, it is again the judge who must bring to bear legal wisdom, experience, and the principles of justice

²⁴ European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and Their Environment, Adopted at the 31st Plenary Meeting of the CEPEJ, Strasbourg, 3-4 Dec. 2018.

²⁵ Artificial Intelligence (AI) – Judicial Guidance, Dec. 12, 2023, www.judiciary.uk. (Last visited May 28, 2024).

to interpret AI's findings within the broader context of the judicial process. While AI offers profound assistance to judges in various aspects of their roles, it is paramount that this technology is applied with discernment. AI's assistance should be harnessed to enhance judicial efficiency, consistency, and fairness, without undermining the indispensable human elements of empathy, moral judgment, and ethical considerations intrinsic to the justice system.

XI. STRATEGIC ROADMAP FOR TRANSFORMING PAKISTAN'S JUDICIAL SYSTEM INSPIRED BY THE CHINESE MODEL OF SMART COURTS

Phase 1: Foundational Assessment and Strategic Planning

1. Comprehensive Assessment:

- Conduct a thorough evaluation of the current judicial infrastructure to identify critical bottlenecks, such as case backlogs and resource deficiencies.
- Formulate a strategic plan detailing the integration of advanced technologies, setting measurable objectives, key performance indicators (KPIs), and clear timelines.

2. Digitization of Judicial Records:

- Initiate a nationwide project to digitize all existing court records, transitioning from paper-based to electronic systems.
- Establish a centralized, secure database accessible to all judicial entities to streamline record-keeping and data management.

3. Infrastructure Development:

- Invest in robust IT infrastructure, including high-speed internet, secure servers, and cutting-edge software solutions.
- Implement comprehensive training programs to equip judicial staff and court personnel with the necessary digital skills.

Phase 2: Technology Integration in Judicial Processes

1. Implementation of E-Filing Systems:

- Deploy a user-friendly electronic filing (e-filing) system enabling litigants to submit documents and cases online, reducing physical paperwork and improving efficiency.
- Ensure the system is intuitive and accessible to all users, including those with limited technical expertise.

2. Advanced Case Management Systems:

- To enhance the efficiency and transparency of the judicial process, it is proposed to develop and integrate a comprehensive online case management system. This system should be designed to monitor the progress of cases, schedule hearings, and manage court dockets effectively. While the electronic case management system is currently operational in major cities, there is a pressing need to extend its implementation nationwide. This expansion will ensure uniform access to judicial services, streamline case handling, and improve the overall effectiveness of the legal system across the Country.
- Incorporate AI tools to automate routine tasks such as document classification and case prioritization, enhancing operational efficiency.

3. Pilot Testing and Feedback Loops:

- Roll out pilot programs in select courts to test and refine new technologies and workflows.
- Collect and analyze feedback from judges, attorneys, and litigants to optimize the system before full-scale implementation.

Phase 3: Enhancing Judicial Transparency and Efficiency

1. Livestreaming Judicial Proceedings:

- Introduce livestreaming capabilities for court hearings to promote transparency and public accountability in the judicial process.
- Develop and enforce guidelines to protect the privacy and rights of all participants in the judicial proceedings.

2. AI-Driven Judicial Tools:

- Implement AI-powered voice-to-text transcription services to ensure accurate and timely documentation of court proceedings.
- Utilize AI for advanced legal research, enabling rapid access to relevant case law and legal precedents.

3. Intelligent Case Management:

- Deploy intelligent case management systems that leverage AI to predict case outcomes, assist in decision-making, and maintain consistency in judicial rulings.
- Ensure continuous data updates and system transparency to maintain trust in AI-assisted judicial processes.

Phase 4: Scaling and Integrating Advanced Technologies

1. National E-Evidence Platform:

- Establish a blockchain-based national e-evidence platform to authenticate and securely exchange digital evidence.
 - Seamlessly integrate this platform with existing court management systems to ensure interoperability and efficiency.
- 2. Ongoing Training and Professional Development:**
- Implement continuous training programs for judges, lawyers, and court staff to keep abreast of technological advancements and their judicial applications.
 - Foster a culture of continuous learning and adaptation to technological innovations.
- 3. Public Engagement and Accessibility:**
- Launch awareness campaigns to educate the public about new digital judicial services and their benefits.
 - Ensure these services are inclusive, providing necessary support for vulnerable populations to access justice.

Phase 5: Continuous Improvement and Innovation

- 1. Systematic Feedback and Monitoring:**
- Establish robust mechanisms for collecting and analyzing feedback from all stakeholders to identify areas for continuous improvement.
 - Regularly monitor the impact of technological innovations on judicial efficiency and justice delivery.
- 2. Encouraging Innovation:**
- Stay informed about global advancements in legal technology and explore their potential applications in Pakistan's judicial context.
 - Scale successful initiatives across all courts, ensuring uniformity and standardization.
- 3. Ethical and Legal Governance:**
- Develop and enforce comprehensive ethical guidelines and legal frameworks governing the use of AI and technology in the judiciary.
 - Uphold the principles of fairness, transparency, and justice in all technological implementations.

CONCLUSION

By adhering to this strategic phased roadmap, Pakistan can effectively transform its judicial system into a modern, efficient, and transparent institution,

drawing on the successful practices employed by China. This transformation will enhance access to justice, improve public trust, and ensure the judiciary's alignment with contemporary technological standards.