



Judicial Transformation: Integration of AI Judges in Innovating Indonesia's Criminal Justice System

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Abstract

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In the midst of the current digital era, artificial intelligence (AI) technology offers the potential to improve many aspects of life, including in the field of justice. In this context, the idea of integrating AI into the judicial system emerges as one potential solution. AI judges, as a concept, are considered capable of providing more objective decisions, speeding up court proceedings, and reducing the workload of human judges. The purpose of this study is to evaluate the potential and challenges in the integration of artificial intelligence (AI) into the Indonesian judicial system, with the ultimate goal of creating a judicial system that is more fair, efficient, and in accordance with Indonesia's socio-cultural context. This research utilizes normative legal methods by adopting statutory, conceptual, comparative, and futuristic approaches. The nature of this research is descriptive-prescriptive. The data that has been collected is analyzed using the content analysis method. The result of this research is that "AI Judges" has the potential to be a very useful tool in Indonesia's criminal justice system in the future. However, the integration of AI must be done carefully, taking into account all the benefits and risks, and ensuring that justice and humanity remain at the core of the system. In addition, inter-sectoral cooperation and a deep understanding of the local context are key to the success of this integration. In an overall perspective, while AI technology promises greater efficiency and objectivity in the justice system, the essence of humanity and cultural considerations remain irreplaceable aspects. Thus, it is hoped that in the future, collaboration between AI judges and human judges can create a justice system that is more fair, efficient, and in accordance with Indonesia's socio-cultural context.

Keywords: Judicial Transformation, AI Intergration, AI Judges, Criminal Justice Reform

Abstrak

Di tengah era digital saat ini, teknologi kecerdasan buatan (AI) menawarkan potensi untuk memperbaiki banyak aspek kehidupan, termasuk di bidang peradilan. Dalam konteks ini, ide mengenai integrasi AI ke dalam sistem peradilan muncul sebagai salah satu solusi potensial. Hakim AI, sebagai konsep, dianggap mampu memberikan keputusan yang lebih objektif, mempercepat proses pengadilan, dan mengurangi beban kerja hakim manusia. Tujuan dari penelitian ini adalah untuk mengevaluasi potensi dan tantangan dalam integrasi kecerdasan buatan (AI) ke dalam sistem peradilan Indonesia, dengan tujuan akhir menciptakan sistem peradilan yang lebih adil, efisien, dan sesuai dengan konteks sosial budaya Indonesia. Penelitian ini menggunakan metode hukum normatif dengan mengadopsi pendekatan berdasarkan undang-undang, konseptual, komparatif, dan futuristik. Sifat dari riset ini bersifat deskriptif-preskriptif. Data yang telah terkumpul dianalisis menggunakan metode analisis isi. Hasil penelitian ini "Hakim AI" memiliki potensi untuk menjadi alat yang sangat berguna dalam sistem peradilan pidana di Indonesia dimasa yang akan datang. Namun, integrasi AI harus dilakukan dengan hati-hati, dengan mempertimbangkan semua keuntungan dan risiko, serta memastikan bahwa keadilan dan kemanusiaan tetap menjadi inti dari sistem tersebut. Sebagai tambahan, kerja sama antar sektor dan pemahaman mendalam tentang konteks lokal menjadi kunci keberhasilan integrasi ini. Dalam perspektif keseluruhan, walaupun teknologi AI menjanjikan efisiensi dan objektivitas yang lebih besar dalam sistem peradilan, esensi kemanusiaan dan pertimbangan kultural tetap menjadi aspek yang tak tergantikan. Sehingga, diharapkan dalam masa depan, kolaborasi antara hakim AI dan hakim manusia dapat menciptakan sistem peradilan yang lebih adil, efisien, dan sesuai dengan konteks sosial budaya Indonesia.

Kata kunci: Transformasi Peradilan, Integrasi AI, Hakim AI, Reformasi Keadilan Pidana

I. Introduction

The Industrial Revolution 4.0 era is characterized by the unification of technology and globalization. It results from the integration of various technological innovations, such as the Internet of Things (IoT) that allows devices to communicate with each other, blockchain that provides a secure and immutable record of transactions, and artificial intelligence that gives machines the ability to process and learn from data in a manner similar to humans.¹ Not to forget, big data facilitates data analysis on a massive scale, cloud computing enables virtual storage and processing of data, while 3D printing is changing the way humans produce goods. All of these innovations, when combined, create an unprecedented industrial transformation, changing the way people work, communicate and innovate in various sectors.²

In the past few decades, technological advancements, particularly in the field of Artificial Intelligence (AI), have changed many aspects of our lives.³ Not just a tool that makes everyday life easier, AI has revolutionized many industry sectors with a wide scope from healthcare to transportation.⁴ This progress can be seen in how AI has been adopted in many sectors, creating more efficient, accurate, and faster solutions. OpenAI ChatGPT, for example, has become one of the most popular AI applications, penetrating various industrial and educational sectors.⁵ Its use is not limited to specific fields, but has become a tool that supports many professional and academic activities. Along with these developments, the legal profession has not escaped the influence of the AI revolution. We have already seen how AI-based chatbots, such as DoNotPay in America, took the legal world by storm with their ability to provide legal advice to the public.⁶ This technological advancement raises fundamental questions about what the future holds for the legal profession, particularly the role of judges. As AI capabilities continue to increase, the ethical, technical and practical considerations of whether AI can or should take over the role of judges in the courtroom are important debates.⁷ The role of AI in the legal profession does not stop at being able to provide advice, but also has the potential to assist in legal data analysis, precedent selection, and even in simulating court decisions based on historical data. However, the idea of AI taking on the role of a judge poses unprecedented challenges and questions. Some countries have successfully incorporated artificial intelligence (AI) into their judicial systems. For example, Estonia has developed a system known as "Robot Judge". Also, in 2017, China introduced the use of AI in a cyber court in Hangzhou.⁸ These innovations demonstrate how technology, particularly AI, can be integrated into traditional legal structures to improve the efficiency and accessibility of legal services. Overall, while the incorporation of AI into the justice system offers a number of advantages in terms of efficiency and accessibility, it also raises ethical challenges and concerns. It is important for any country considering adopting this technology to understand the risks and benefits, and establish a robust framework to ensure that the technology is used in an ethical and fair manner. In the midst of the rapid flow of information and the

¹ Sofi Liza Zahara, Zahira Ula Azkia, dan Muhammad Minan Chusni, "Implementasi Teknologi Artificial Intelligence (AI) dalam Bidang Pendidikan.," *Jurnal Penelitian Sains dan Pendidikan (JPSP)* 3, no. 1 (2023): 15-20. Doi. 10.23971/jpsp.v3i1.4022

² Adi Nuryanto, "Tantangan Administrasi Publik di Dunia Artificial Intelligence dan Bot," *Jejaring Administrasi Publik* 12, no. 2 (2021): 139-147. Doi. 10.20473/jap.v12i2.30882

³ Ke Zhang dan Ayse Begum Aslan, "AI Technologies for Education: Recent Research & Future Directions," *Computers and Education: Artificial Intelligence* 2 (Januari 1, 2021): 1-11. Doi. 10.1016/J.CAEAI.2021.100025

⁴ Muhamad Ngafifi, "Kemajuan Teknologi Dan Pola Hidup Manusia Dalam Perspektif Sosial Budaya," *Jurnal Pembangunan Pendidikan: Fondasi dan Aplikasi* 2, no. 1 (2014): 33-47. Doi. 10.21831/jppfa.v2i1.2616

⁵ Aram Bahrini et al., "ChatGPT: Applications, Opportunities, and Threats," *2023 Systems and Information Engineering Design Symposium, SIEDS 2023* (April 14, 2023): 274-279, Accessed July 19, 2023, <https://arxiv.org/abs/2304.09103v1>.

⁶ Theresa Gracita Anthony, "Peluang AI Menggeser Posisi Hakim di Pengadilan," <https://www.kompasiana.com/>, last modified 2023, Accessed July 23, 2023, <https://www.kompasiana.com/theressa81907/646a2e7437cb2a6e5a7f0f92/peluang-ai-menggeser-posisi-hakim-di-pengadilan>.

⁷ Ibid.

⁸ Wahyu Sibarani, "China Gunakan Kecerdasan Buatan agar Hakim Pengadilan Berlaku Adil," <https://sains.sindonews.com/>, last modified 2022, Accessed Juli 23, 2023, <https://sains.sindonews.com/read/827765/768/china-gunakan-kecerdasan-buatan-agar-hakim-pengadilan-berlaku-adil-1657894044>.

development of an increasingly critical society, there is a sharp spotlight on the judiciary, especially judges. Many cases have surfaced showing that some judges are involved in corrupt practices, conflicts of interest, and various other forms of ethical violations. This situation has raised public doubts and concerns about the integrity of the judicial system.

In this context, the idea of integrating AI into the judicial system emerges as one potential solution. AI Judges, as a concept, are considered capable of providing more objective decisions, speeding up court proceedings, and reducing the workload of human judges. However, the application of this technology is certainly not without challenges, especially in the cultural, social, and legal context of Indonesia. Therefore, it is important to understand and explore how Judge AI can play a role in Indonesia's criminal justice reform, and what are the potential benefits and obstacles.

II. Research Problems

In today's digital age, the integration of artificial intelligence technology in various sectors has become a global phenomenon.⁹ "Justice Revolution: The Role of AI Judges in Indonesian Criminal Justice Reform" raises essential questions. How can a machine function as a judge? Can decisions made by AI Judges be considered fair and objective? How will the legal community and the public in Indonesia respond to this concept? And, most crucially, can the integration of AI in criminal justice improve the efficiency and effectiveness of the justice system without compromising integrity and fairness? This research problem aims to understand the potential and challenges of using AI as a judge in the Indonesian criminal justice context.

III. Research Methods

The research entitled "Justice Revolution: The Role of AI Judges in Indonesian Criminal Justice Reform" is an attempt to understand and describe how artificial intelligence technology can influence and potentially reform the criminal justice system in Indonesia. In conducting this research, the normative legal method was chosen as the main approach.¹⁰ This involved an in-depth analysis of relevant regulations and laws, making the statutory approach one of the key pillars of this research. In addition, a conceptual approach was used to understand basic theories and concepts regarding AI and law. Through a comparative approach, the researcher compared AI-related practices and regulations in the judiciary in other countries with those in Indonesia. The futuristic approach, meanwhile, allows researchers to formulate a vision of how AI can be integrated in the criminal justice system in the future.¹¹ The descriptive-prescriptive nature of this research means that the results not only describe existing phenomena, but also provide recommendations or suggestions on how AI should be applied in the Indonesian criminal justice context.¹² To ensure that the interpretation of the data was accurate, the content analysis method was adopted in examining and understanding the collected data.¹³

IV. Result and Discussion

1. Objectivity and Bias in Artificial Intelligence Judges

In today's digital era, the integration of technology, particularly artificial intelligence (AI), in the justice system has become an interesting topic of discussion in many countries. A number

⁹ Ferani Mulianingsih et al., "Artificial Intelligence Dengan Pembentukan Nilai Dan Karakter Di Bidang Pendidikan," *IJTIMAIYA: Journal of Social Science Teaching* 4, no. 2 (2020): 148–154. Doi. 10.21043/ji.v4i2.8625

¹⁰ I Gusti Ketut Ariawan, "Metode Penelitian Hukum Normatif," *Kertha Widya* 1, no. 1 (Desember 31, 2013): 21–30, Accessed Oktober 5, 2022, <https://ejournal.unipas.ac.id/index.php/KW/article/view/419>. Doi. 10.37637/KW.V1I1.419

¹¹ Peter Mahmud Marzuki, *Penelitian Hukum* (Jakarta: Kencana Prenada Media, 2005).

¹² Zico Junius Fernando et al., "The Freedom of Expression in Indonesia," *Cogent Social Sciences* 8, no. 1 (2022): 1–11. Doi. 10.1080/23311886.2022.2103944

¹³ Herlambang et al., "Kejahatan Memperkaya Diri Sendiri Secara Melawan Hukum (Illicit Enrichment) Dan Aparatur Sipil Negara: Sebuah Kajian Kritis," *RechtsVinding* 11, no. 2 (2022): 247–264, <http://dx.doi.org/10.33331/rechtsvinding.v11i2>.

of countries have begun to experience the benefits of this technology in an effort to increase efficiency and ensure speed and accuracy in case resolution.¹⁴ Estonia has taken the revolutionary step of integrating AI as judges in its justice system. The move is an effort to improve the efficiency of government services as well as tackle the backlog of cases piling up in the courts. Under the scheme, AI-based judges are tasked with resolving small claims disputes, particularly contract claims with a value of up to 7,000 Euros. This AI-based system was chosen for its ability to process claims without the need to use personal judgment, so it is considered faster and more objective. On the other hand, China developed an advanced robot named Xiaofa, which has the ability to provide legal consultations and assist the public in understanding various legal terms. The robot is equipped with extensive knowledge covering more than 40,000 litigation-related questions and can resolve 30,000 diverse legal issues. As part of its "smart justice" vision, China has placed more than a hundred robots like Xiaofa in courts across the country. The aim is to assist in summarizing case histories and previous decisions in order to reduce the workload of court officials. Some robots even specialize in certain areas, such as business law or labor law. Given the fact that there are around 120,000 judges in China who have to deal with around 19 million cases every year, the need for AI integration is becoming increasingly urgent and relevant.¹⁵

In 2016, a report from the Daily Mail in the United Kingdom stated that a group of researchers had created an Artificial Intelligence (AI) system capable of predicting the outcome of verdicts in human rights courts with 79% accuracy. The research was conducted by analyzing the text of judicial decisions using machine learning algorithms designed by University College London (UCL), University of Sheffield, and University of Pennsylvania. It states that technological advancements, particularly in the field of Artificial Intelligence (AI), have great potential in supporting the legal sector. Through the use of advanced machine learning algorithms, AI can analyze and understand patterns from previous court decisions and thus, provide accurate predictions of future outcomes. AI's performance of up to 79% accuracy in predicting human rights court decisions demonstrates the importance of integrating this technology in modern justice systems to improve efficiency and rigor in decision-making.¹⁶

The integration of Artificial Intelligence in the justice system has been a hotly debated topic among experts. Proponents emphasize that AI has the potential to reduce the inherent biases that often arise from human decision-making, thanks to its data-oriented approach.¹⁷ With AI, decision-making can be based on objective and consistent data analysis, without being influenced by personal emotions or prejudices. However, on the other hand, critics of AI point out that AI is a technological product that, while sophisticated, is not equipped with human emotions and intuition. They argue that emotions, especially compassion, play an important role in legal decision-making. A human judge is able to weigh and understand the social background, culture, and emotional context of a case, while AI may lack such nuances. This could mean that in certain cases, the decisions taken by AI may be too rigid or not consider the human aspect.

When talking about technological advancements, especially in the context of Artificial Intelligence, we often get caught up in thinking that technology is a neutral and objective entity.¹⁸ However, the reality is that, like many other aspects of life, AI can also be affected by bias. First, it must be understood where these biases come from. AI, especially those used in roles such as

¹⁴ Zichun Xu, "Human Judges in the Era of Artificial Intelligence: Challenges and Opportunities," *Applied Artificial Intelligence* 36, no. 1 (Desember 31, 2022): 1–22, <https://doi.org/10.1080/08839514.2021.2013652>.

¹⁵ Cheryl Patriana Yuswar, "AI sebagai Hakim, Dapat Hilangkan Putusan Pengadilan yang Bias?," <https://kumparan.com/>, last modified 2023, <https://kumparan.com/cherylyuswar/ai-sebagai-hakim-dapat-hilangkan-putusan-pengadilan-yang-bias-1zeEkB4MfXu/full>.

¹⁶ Saskia Dinda Ratna Pratiwi, "Mungkinkah Profesi Hakim dan Pengacara di Indonesia Akan Digantikan dengan Artificial Intelligence (AI)?," <https://heylaw.id/>, last modified 2023, Accessed July 23, 2023, <https://heylaw.id/blog/mungkinkah-profesi-hakim-dan-pengacara-di-indonesia-akan-digantikan-dengan-artificial-intelligence-ai>.

¹⁷ Zichun Xu, Yang Zhao, dan Zhongwen Deng, "The Possibilities and Limits of AI in Chinese Judicial Judgment," *AI and Society* 37, no. 4 (Desember 1, 2022): 1601–1611, Accessed July 23, 2023, <https://link.springer.com/article/10.1007/s00146-021-01250-9>. Doi. 10.1007/S00146-021-01250-9/METRICS

¹⁸ Vincent C. Müller, "Risks of General Artificial Intelligence," *Journal of Experimental and Theoretical Artificial Intelligence* (Taylor & Francis, 2014), <http://dx.doi.org/10.1080/0952813X.2014.895110>.

Judge AI, operate based on algorithms that are "trained" using data. This data often comes from historical events or existing data. For example, in the context of criminal justice, training data might include previous court decisions, sentences given, or even testimonials. If such historical data has imbalances or prejudices for example, discrimination against certain ethnic groups or gender, AI may adopt the same biases. The question then arises, can AI ensure objectivity in legal decision-making? For example, if in the history of criminal justice in Indonesia there is a bias against a group of people, AI Judges trained with such data will have a high probability of reinforcing and replicating the same bias. While AIs do not have innate emotions or prejudices like humans, they can "learn" those prejudices from the data used to train them. However, on the other hand, with the right understanding and approach, AI also has the potential to reduce bias. Using sophisticated programming techniques, humans can identify and correct biases in training data, or even design algorithms that specifically accommodate bias prevention.¹⁹ This could be a significant step forward in achieving objectivity in criminal justice, something that is often difficult to achieve with human intervention alone. One of the key advantages of AI is its ability to process large amounts of data with incredible speed and accuracy. This means that with the right dataset and a careful approach, AI Judges can be trained to recognize and overcome their own biases, providing a more in-depth and objective analysis than a human can provide. However, there are significant challenges in realizing this vision. Identifying bias in data, especially in a complex context such as criminal justice, is no easy task. Furthermore, there are ethical questions regarding who should be responsible for correcting these biases and how best to do so.²⁰

In the context of Indonesia, where cultural and ethnic diversity is very rich, this challenge becomes even more complex. Recognizing and respecting this diversity while ensuring that justice is served objectively and fairly for all citizens is a task that requires care and deep thought.²¹ While Judge AIs have the potential to introduce an unprecedented level of objectivity in criminal justice, there is a real risk that without proper intervention, they could also reinforce biases that already exist. To ensure that Judge AI serves as a truly objective instrument of justice, a multi-disciplinary approach involving technological, legal, ethical, and social experts is required.

The application of Artificial Intelligence (AI) in the judicial system has shown potential in dealing with simple claim disputes with clear and limited parameters. AI algorithms can be designed to evaluate basic facts and generate decisions based on legal precedents and existing regulations.²² However, when it comes to more complex cases involving deep moral considerations, emotions, and legal interpretations, the current capacity of AI is still limited. For example, in cases involving intent, motivation, or social and cultural impact, legal decisions require human understanding and empathy that cannot be replicated by machines. In many countries, AI has begun to be used in the courtroom, but its function is more of a supporting role. By helping to analyze data and precedents, AI reduces judges' workload and increases efficiency. However, the idea of completely replacing judges with AI in the courtroom is still a distant concept from reality. Human judges play a crucial role in understanding the nuances, context, and complexities of legal cases that often go beyond pure data analysis.

¹⁹ Vic Matta et al., "Diverse Perspectives on Bias in AI," *Journal of Information Technology Case and Application Research* 24, no. 2 (April 3, 2022): 135-143, <https://doi.org/10.1080/15228053.2022.2095776>.

²⁰ Tanay Chowdhury dan John Oredo, "AI Ethical Biases: Normative and Information Systems Development Conceptual Framework," *Journal of Decision Systems* (April 20, 2022): 1-17, <https://doi.org/10.1080/12460125.2022.2062849>.

²¹ Mustaghfiroh Rahayu, "Keragaman di Indonesia dan Politik Pengakuan (Suatu Tinjauan Kristis)," *Jurnal Pemikiran Sosiologi* 4, no. 2 (2017): 1-18. Doi. 10.22146/jps.v4i2.28577

²² Gizem Yalcin et al., "Perceptions of Justice by Algorithms," *Artificial Intelligence and Law* 31, no. 2 (Juni 1, 2023): 269-292, Accessed July 23, 2023, <https://link.springer.com/article/10.1007/s10506-022-09312-z>. Doi. 10.1007/S10506-022-09312-Z/FIGURES/10

2. The Concept of AI Judges and the Renewal of the Indonesian Criminal Law System

In recent years, Indonesia's judicial system has faced significant credibility challenges due to the many cases involving its judges. Ironically, those who are supposed to be role models in upholding the law and integrity have been caught up in various scandals, including corruption cases.²³ These cases have not only raised public doubts about the individual integrity of the judges concerned, but also shaken public confidence in the judiciary as an institution.²⁴ The involvement of judges in such cases reflects that the justice system needs deep reforms to ensure that those who sit on the bench have integrity, competence and unwavering dedication in serving justice.

Table 1. List of judges implicated in corruption cases

No	Names of judges involved in corruption cases	Position
1	Kartini Marpaung	Ad hoc judge of Semarang Corruption Court
2	Heru Kisbandono	Ad hoc judge of the Pontianak Corruption Court
3	Pragsono	Judge of Semarang Corruption Court
4	Asmadinata	Ad hoc judge of Palu Corruption Court
5	Setyabudi Tejocahyono	Vice Chairman of Bandung District Court
6	Ramlan Comel	Ad hoc judge of Bandung Corruption Court
7	Pasti Serefina Sinaga	Judge of the West Java High Court
8	Amir Fauzi	Judge of the Medan State Administrative Court
9	Dermawan Ginting	Judge of the Medan State Administrative Court
10	Tripeni Irianto Putro	Chairman of Medan Administrative Court
11	Janner Purba	Chairman of Kepahiang District Court
12	Toton	Ad hoc judge of Bengkulu Corruption Court
13	Dewi Suryana	Judge at Bengkulu Corruption Court
14	Sudiwardono	Chairman of North Sulawesi High Court
15	Merry Purba	Ad hoc judge of Medan Corruption Court
16	Wahyu Widya Nurfitri	Judge of Tangerang District Court
17	Iswahyu Widodo	South Jakarta District Court judge
18	Irwan	South Jakarta District Court judge
19	Lasito	Semarang District Court judge
20	Kayat	Balikpapan District Court judge

Source: Processed from various sources

A report from Indonesia Corruption Watch (ICW), a monitoring and advocacy organization dedicated to fighting corruption, revealed astonishing facts about the integrity of the Indonesian judiciary. From 2012 to 2019, 20 judges were implicated in corruption cases. This figure not only demonstrates the vulnerability of our judicial system to irregularities, but also highlights the urgency of deep reforms within the judiciary. The fact that twenty people, who are supposed to be symbols of justice and integrity, have been implicated in corrupt acts creates a sense of disappointment and distrust among the public. The credibility of the judicial system, which ideally should be the main bastion of law and justice, has been tarnished. This situation urges the government, judiciary and other stakeholders to move quickly to improve the system and restore public trust in the judiciary in Indonesia.²⁵ In 2022, the Indonesian judiciary was once again shocked by a case of alleged corruption involving one of its top officials. Supreme Court Judge Gazalba Saleh allegedly received gratuities amounting to tens of billions of rupiah. This

²³ Siti Nurhalimah, "Integritas Hakim Indonesia," *'Adalah* 1, no. 2 (2018): 15-16. Doi. 10.15408/adalah.v1i2.8205

²⁴ Tonny Rompis, "Kajian Sosiologi Hukum Tentang Menurunnya Kepercayaan Masyarakat Terhadap Hukum Dan Aparat Penegak Hukum Di Sulawesi Utara," *Lex Crimen* 4, no. 8 (2015): 166-176.

²⁵ Nadia Intan Fajarlie, "Daftar Panjang Hakim-hakim yang Terjerat Kasus Korupsi, dari Pengadilan Negeri hingga Mahkamah Agung," <https://www.kompas.tv/nasional/331194/daftar-panjang-hakim-hakim-yang-terjerat-kasus-korupsi-dari-pengadilan-negeri-hingga-mahkamah-agung>, last modified 2022, Accessed July 23, 2023, <https://www.kompas.tv/nasional/331194/daftar-panjang-hakim-hakim-yang-terjerat-kasus-korupsi-dari-pengadilan-negeri-hingga-mahkamah-agung>.

case adds to the long list of disciplinary actions in the judiciary, and more concerning, Gazalba is one of two Supreme Court judges allegedly involved in the practice of buying and selling cases at the Supreme Court (MA), the highest judicial institution in Indonesia. In addition to the alleged graft, Gazalba Saleh was also named as a suspect in a money laundering offense (TPPU), demonstrating the complexity and severity of his actions. Cases like these not only shake public confidence in the integrity of the judicial system, but also highlight the urgent need for reform and cleansing within the judiciary in order to restore public trust and fulfill its function as the guardian of justice in this country.²⁶

Faced with this situation, one innovation worth considering is the adoption of Artificial Intelligence (AI) in the role of judges in Indonesia's criminal justice system. By utilizing AI, a more transparent and objective system can be created, free from vulnerability to corruption and subjective bias. AI technology, which has already proven effective in various other fields such as medical, education, and business, can be a very useful tool in producing legal decisions that are based on data and facts, rather than personal interpretations or preferences.²⁷ AI Judges, governed by meticulous and fair algorithms, will make decisions based on the law and evidence at hand, without being influenced by fear, desire, or corruption. In this sense, AI technology can help humanity achieve the ultimate legal ideal: pure and unwavering justice. The introduction of Artificial Intelligence (AI) technology into various sectors has revolutionized ways of working and approaches in many fields.²⁸ One concept that is currently under the spotlight is the idea of "AI Judges" and how it could impact the Indonesian criminal justice system. AI Judges is a concept where artificial intelligence is used to assist in the judicial process, from analyzing evidence, comparing with previous cases, to making decisions based on existing laws and precedents. The main advantages of this approach are efficiency, consistency, and the ability to access and compare data from multiple sources in a short period of time.²⁹

Actually, throughout 2022, the Supreme Court of the Republic of Indonesia recorded a significant achievement in case settlement. Data released on December 27, 2022 showed that the Supreme Court had settled 30,195 cases, a figure touted as the highest achievement in the history of Indonesia's highest judicial institution. This confirms the Supreme Court's commitment to improving the efficiency and effectiveness of legal services for the community. However, this achievement is not without its challenges. Despite setting a record in minution, the Supreme Court still faces several challenges, especially in the aspect of transparency in case handling. Transparency is a key principle in the justice system that aims to ensure that all parties involved in the judicial process receive accurate, timely and reliable information. As one of the proactive steps in addressing this challenge, the Supreme Court has taken the initiative to utilize technology in the judicial process. They are developing an Artificial Intelligence (AI)-based application that aims to appoint Supreme Court Justices in cassation and judicial review cases.³⁰ This initiative shows the Supreme Court's seriousness in utilizing technology to improve transparency and accountability in the judicial process. The use of AI is expected to minimize human intervention in the appointment of judges, thereby reducing the potential for bias and error. In a broader context, this move by the Supreme Court marks a new era in Indonesia's justice system, where technology and innovation become an integral part of efforts to improve the quality of legal

²⁶ Syakirun Ni'am, "Hakim Agung Gazalba Saleh Diduga Terima Gratifikasi Puluhan Miliar, Diubah Jadi Aset," <https://nasional.kompas.com/read/2023/03/22/17135791/hakim-agung-gazalba-saleh-diduga-terima-gratifikasi-puluhan-miliar-diubah>, last modified 2023, Accessed July 23, 2023, <https://nasional.kompas.com/read/2023/03/22/17135791/hakim-agung-gazalba-saleh-diduga-terima-gratifikasi-puluhan-miliar-diubah>.

²⁷ Aleš Završnik, "Criminal justice, artificial intelligence systems, and human rights," *ERA Forum* 20, no. 4 (2020): 567-583, <http://dx.doi.org/10.1007/s12027-020-00602-0>.

²⁸ Hin-Yan Liu et al., "Artificial Intelligence and Legal Disruption: a New Model for Analysis," *Law, Innovation and Technology* 12, no. 2 (July 2, 2020): 205-258, <https://doi.org/10.1080/17579961.2020.1815402>.

²⁹ Eiichiro Watamura et al., "Empathetic Robot Judge, We Trust You," *International Journal of Human-Computer Interaction* (July 11, 2023): 1-10, <https://doi.org/10.1080/10447318.2023.2232982>.

³⁰ Ferinda K Fachri, "Kembangkan Aplikasi Penunjukan Majelis, MA Gunakan Artificial Intelligence," <https://www.hukumonline.com/>, last modified 2023, Accessed July 23, 2023, <https://www.hukumonline.com/berita/a/kembangkan-aplikasi-penunjukan-majelis--ma-gunakan-artificial-intelligence-lt63f4542d35bf3/>.

services for the community. However, the implementation of such technology will require continuous evaluation and supervision to ensure that integrity and fairness are maintained.

The Supreme Court of the Republic of Indonesia's initiative in adopting technology, particularly Artificial Intelligence (AI), demonstrates the institution's awareness and openness to innovation and the times. Through initiatives such as the development of AI-based applications for the appointment of Supreme Court Justices, the Supreme Court demonstrates its progressive vision in improving the judicial system and increasing efficiency and transparency. The Supreme Court's utilization of AI, albeit in a limited capacity, marks an era where technology can be integrated into the legal system to support and strengthen the judicial process. This decision is not just about utilizing technology, but also about how the judiciary can adapt and innovate in response to today's needs and challenges.

Implementing this concept in Indonesia is not without its challenges. Indonesia's criminal law system is rooted in continental legal traditions that differ from precedent-based legal systems such as in the United States. In Indonesia, laws and regulations are the main basis for decision-making, although of course there are also considerations of jurisprudence. The reform of Indonesia's criminal law system by adopting AI Hakim will require a series of adjustments.

- a. The database used by the AI must be very comprehensive, covering all relevant laws, regulations, and jurisprudence. In addition, AI must also be "taught" to understand the cultural nuances and social context of Indonesia so that its decisions are relevant and in accordance with prevailing social norms. Then, there are issues of ethics and morality. How can human rights, such as the right to a fair trial, be ensured to be protected if decisions are made by machines? While AI may be more objective and free from corruption or other influences, its lack of empathy and deep understanding of the human aspects of a case can be a drawback.
- b. Furthermore, there are challenges in socialization and public acceptance. Given that legal decisions have a direct impact on a person's life, people may feel skeptical or distrustful if such decisions are made by machines instead of humans.

Nonetheless, with the right approach, AI Judges can be a very useful tool in the judicial process in Indonesia. For example, AI could be used as an assistant for judges in collecting and analyzing case-related data, while the final decision remains with the judge. The concept of Judge AI and the reform of Indonesia's criminal justice system is a promising idea, but it requires a cautious approach and deep thought to ensure that justice remains the top priority. The integration of AI Judges into Indonesia's criminal justice system is not only about the technology itself, but also about how it is received by stakeholders and the wider public. It is important to remember that while technology can provide many benefits, its adoption must be done with consideration of the basic values of our legal system and human rights.

Education and training are crucial aspects of this reform. Judges, prosecutors, lawyers and other legal professionals must be equipped with the necessary knowledge and skills to understand and interact with these new technologies. They must understand how AI works, its potential weaknesses, and how to ensure that AI decisions are in line with Indonesia's legal principles. In addition, transparency in how AI works is important. It is crucial for stakeholders to understand how decisions are made by AI. What are the data used? How are the algorithms developed? What are the biases that might influence AI decisions? The answers to these questions will help build trust and ensure that AI is used in the right and fair way. Another area of concern is infrastructure and technical support. Implementing AI in the courtroom requires a reliable

technology infrastructure. The system must be secure from external interference, such as cyberattacks, and have the capacity to process large amounts of data quickly and accurately.

Finally, revisions to laws and regulations may be necessary to ensure that the use of AI in the justice system complies with existing legal and ethical standards. Based on the prevailing legal provisions in Indonesia, it does not seem possible for Artificial Intelligence (AI) to take over the role of a judge. This is based on the requirements set out in Law Number 49 of 2009 which is the second amendment to Law Number 2 of 1986 on General Courts. According to Article 14 paragraph (1) of the law, a person who can be appointed as a judge must meet certain criteria, such as: must be an Indonesian citizen, have strong faith, be loyal to Pancasila and the 1945 Constitution, have a law degree, have completed judge education, have mental and physical capability in carrying out their duties, demonstrate integrity, honesty, and justice, be at least 25 years old and a maximum of 40 years old, and have a clean legal record. With these requirements, it is clear that AI cannot fulfill the necessary criteria to become a judge in Indonesia. Indeed, if the rules are revised in the future to accommodate the role of AIs in the judicial system, then there is a possibility that AIs could have a greater role. However, revising such a law would require in-depth consideration, not only from the technical and practical aspects, but also from philosophical, ethical, and social perspectives. Legal reforms that allow AI to play a role in the judiciary are not only concerned with the capabilities of the technology itself, but also how society, the legal profession, and the government view the consequences of such decisions. A key consideration is how to ensure fairness, objectivity, and transparency are maintained in the court process. The overall process of integrating AI into Indonesia's criminal legal system is not an easy task and requires cooperation from all stakeholders. However, with a strong commitment, a clear vision, and a cautious approach, AI Judges can become an integral part of the future of justice in Indonesia, bringing new efficiency and objectivity without compromising the principles of fairness that are the cornerstone of the legal system.

3. Social and Ethical Implications of Future AI Judges

When it comes to the application of advanced technology, particularly artificial intelligence (AI) in the justice system, there are several social and ethical implications that need to be considered, especially in the Indonesian context.

a. Public Trust

One of the most fundamental things in the justice system is public trust. This trust is the basis for legitimizing the entire legal process. When AI is integrated as a "judge", there can be a sense of uncertainty and concern from the public. What if the AI makes a mistake? Will the public accept decisions made by machines instead of humans with emotional and moral considerations?

b. Objectivity vs. Empathy

AI may be able to make decisions based on data and precedents with great speed and accuracy. However, judging is not just about data, it is also about understanding the social, cultural and emotional context. Human judges can weigh the emotional and human aspects of a case, something that AI may not be able to fully do.

c. Privacy and Data Issues

With AI processing information, privacy issues become crucial. How is an individual's personal data secured? How to ensure that the data used by AI is not misused for other purposes?

d. Accountability

If there is an error in the decision made by AI, who is responsible? Is it the algorithm creator, the operator, or the judicial institution? What is the process for appealing or revising decisions made by AI?

e. Employment Implications

The use of AI in the judiciary may reduce the workload of judges and court staff. However, it may also threaten the jobs of many legal professionals if AI is perceived to replace their roles completely.

f. Cultural Considerations

Indonesia has a rich and diverse cultural background. How to ensure that AI understands cultural nuances and local values when making decisions?

g. Ethics of AI Development

The process of creating AI algorithms should ensure that no particular biases are introduced, so that the resulting decisions are fair and non-discriminatory.

While the potential of artificial intelligence in the judiciary is promising in terms of efficiency and objectivity, there are many social and ethical considerations that must be taken into account.³¹ It is important for Indonesia to develop a framework that ensures that this technology is applied in a fair, transparent and responsible manner, always prioritizing justice and human rights. Faced with the complexity of the social and ethical implications of implementing Artificial Intelligence (AI) Judges in Indonesia, strategic steps need to be taken to ensure a smooth and fair integration. Here are some ways that can be considered:

a. Public Consultation and Dialogue

Before implementing AI in the justice system, authorities need to conduct public consultations. This provides an opportunity for the public to voice their concerns, questions, and suggestions, and gives the public an understanding of how AI will function in the justice context.

b. Training and Education

Ensure that all stakeholders, from judges, prosecutors, lawyers, to court staff, receive adequate training on how AI works, as well as its ethical and social implications.

c. AI Ethical Framework

Establish an ethical framework for the development and use of AI in the judiciary. This framework should emphasize transparency, accountability, and fairness.

d. Independent Audit and Review

Provide a mechanism for independent audit and review of decisions made by AI. This ensures that AI operates in accordance with established ethical and legal standards.

e. Appeal Mechanism

Establish a clear mechanism for individuals to appeal against decisions made by AI, ensuring that the rights of individuals remain protected.

f. Continuous Research

Encourage ongoing research on the social and ethical impacts of AI in the justice system, and adapt policies and practices based on the findings.

g. Integration of Local Culture and Values

Ensure that the AI used is trained with datasets that reflect Indonesia's cultural and social diversity, so that the resulting decisions are relevant and in line with local values.

h. Multisectoral Cooperation

³¹ A. D.Dory Realing, "Courts and Artificial Intelligence," *International Journal for Court Administration* 11, no. 2 (2020): 1-10. Doi. 10.36745/IJCA.343

Build cooperation between government, researchers, industry, and civil society to ensure a holistic and integrated approach to the application of AI in the legal field.

In these ways, Indonesia can ensure that the application of AI in the justice system not only improves efficiency but also strengthens the fairness and integrity of the country's criminal justice system. Over time, technological advancements have brought innovations and changes that often disrupt the traditional order in various aspects of life. While these developments are inevitable and have the potential to improve efficiency and quality of life, they are often accompanied by challenges and obstacles. Fear of the unknown, concern over job loss, or anxiety over the social and ethical impacts of new technologies are some examples of challenges that often arise. However, resisting the times is not a wise solution. Humans, as adaptive beings, should learn to accept, adapt, and even utilize technological advancements for the common good. Instead, with a careful, reflective and inclusive approach, we can navigate these changes in a way that ensures that new technologies are applied in a way that is ethical, fair and beneficial to the whole of society. Thus, while challenges and obstacles will inevitably arise, an open attitude to innovation and the courage to keep learning are key to moving forward with the times.

4. Judge Collaboration with AI Judges

The application of Artificial Intelligence (AI) in the judicial system has shown potential in dealing with simple claim disputes with clear and limited parameters. AI algorithms can be designed to evaluate basic facts and generate decisions based on legal precedents and existing regulations. However, when it comes to more complex cases involving deep moral considerations, emotions, and legal interpretations, the current capacity of AI is still limited. For example, in cases involving intent, motivation, or social and cultural impact, legal decisions require human understanding and empathy that machines cannot yet replicate. In many countries, AI has begun to be used in the courtroom, but its function is more of a supporting role. By helping to analyze data and precedents, AI reduces judges' workload and increases efficiency. However, the idea of replacing judges completely with AI in the courtroom is still a distant concept from reality. Human judges play a crucial role in understanding the nuances, context, and complexities of legal cases that often go beyond pure data analysis.

The collaboration between Artificial Intelligence (AI) and human judges in Indonesia's criminal justice system opens up new horizons in the pursuit of faster, objective, and transparent justice. While AI has the potential to improve efficiency and objectivity in decision-making, the presence of human judges remains essential to understand the nuances, cultural context, and human aspects of each case. AI as a "judge" can be a powerful tool in data analysis and legal precedent. With its ability to process large amounts of information quickly, AI can assist human judges in crafting legal reasoning based on historical data and previous decisions. Moreover, with AI, the potential for human bias and error can be minimized, ensuring that every individual is given equal treatment in the eyes of the law. However, while AI can offer objective analysis based on data, the final decision should remain in the hands of human judges. The main reason is that justice is not just about data, but also about a deep understanding of the social, cultural, and emotional context involved in each case. Human judges have the ability to weigh nuances and unexpected aspects that AI may not be able to identify. This collaboration also opens up opportunities for continuous training for judges. With AI being able to identify patterns and trends in legal decisions, judges can get feedback on how their decisions compare to previous cases, helping them in their reflection and professional capacity building. In the Indonesian context, with its rich social and cultural background, the integration of AI in the criminal justice system should be done with caution. The approach taken must take into account the values and norms of the society for the technology to be accepted and effective. Along with the implementation of the technology, socialization and education to the public about the role and limitations of AI in the judiciary is very important. Thus, the combination of AI and human judges in Indonesia's criminal justice system can be an innovative solution to deliver justice more quickly, objectively, and in accordance with human values. However, strategic measures,

continuous evaluation, and multi-stakeholder engagement are needed to ensure effective harmonization between technology and humanism in justice.

V. Conclusion

The technological revolution, especially advances in Artificial Intelligence (AI), has had a significant impact on various industrial sectors and daily life. In the context of the judiciary in Indonesia, the idea of integrating AI as a "judge" brings new opportunities and challenges. As a country with a rich culture and deep values, it is important for Indonesia to consider all aspects before adopting this kind of technology. Public trust in the justice system is an important foundation of the legitimacy of the entire legal process. While AI offers objectivity and efficiency, emotional, cultural, and humanitarian considerations remain core aspects of the judiciary that cannot necessarily be fully replaced by machines. In addition, issues related to privacy, accountability, and ethics in the development and implementation of AI require special attention. With various social and ethical implications emerging, a holistic approach is required. Public consultation, training, ethical frameworks, and ongoing research are some of the strategic steps that can ensure the fair and transparent integration of AI in Indonesia's justice system. Cross-sectoral cooperation and a deep understanding of the local context will be key to the success of this integration. Along with technical and ethical considerations, the application of AI in Indonesia's criminal justice system must also be seen within the broader framework of global changes in the Industrial Revolution 4.0. Technological concepts such as the Internet of Things, blockchain, and big data, serve not only as tools, but also as means to improve transparency, accountability, and fairness throughout the system.

The successful implementation of AI as a judge in the future depends on how the country responds to the challenges of technological adaptation while maintaining integrity and fairness. This requires synergy between technology experts, legal practitioners, authorities, and the general public to jointly formulate solutions that can ensure that these intelligent machines work within the established legal and ethical corridors. In addition, the role of education and socialization cannot be ignored. The public needs to be given a clear understanding of how AI works in a judicial context and what its potentials and limitations are. This is important to ensure that there is public trust in the new system. Finally, while AI technology promises greater efficiency and objectivity, the essence of humanity in the judiciary must still be respected. While AI can assist in decision-making, human values, empathy and a deep understanding of the social and cultural context of society remain indispensable. Thus, in its journey towards reforming the criminal justice system, Indonesia is faced with both challenges and opportunities to combine technological innovation with long-held principles of justice.

In the future, it is hoped that collaboration between Artificial Intelligence (AI) and human judges will offer opportunities for Indonesia's criminal justice system to achieve faster and more objective justice. While AI can improve efficiency with data analysis and minimize human bias, the role of human judges remains crucial to consider cultural and humanitarian nuances in each case. While AI is able to provide in-depth analysis based on data, the final decision must still be made by a human judge who understands the social, cultural, and emotional context. The importance of AI integration must be balanced with education and socialization to the community, ensuring this technology is well received and effective. In the culturally rich context of Indonesia, this approach must take into account local norms and values. The combination of AI and human wisdom promises more efficient and objective justice, but this integration requires continuous evaluation to ensure the harmony between technological innovation and human values in the justice system.

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