

Artificial Intelligence Based Criminal Procedure Law Reform: Progressive Law Based Cyber Crime Enforcement

Henny Saida Flora¹, Aulia Rahman Hakim², Dwi Edi Wibowo³, and Fradhana Putra Disantara⁴

{hennysaida@yahoo.com¹, aoel.kim@gmail.com², naufalwibowo.2016@gmail.com³, dfradhana@gmail.com⁴}

Universitas Katolik Santo Thomas¹, Universitas Tulungagung², Universitas Pekalongan³, Institut Teknologi dan Bisnis Yadika⁴

Abstract. The evolution of criminal acts should influence the development of procedural law in a country. Specifically, the rise of cyber crime necessitates the adaptation of criminal procedural law to remain responsive and relevant. This research aims to initiate an artificial intelligence-based reform of criminal procedural law to enhance its effectiveness in addressing cyber crime. Employing normative legal research with a focus on statutory and conceptual approaches, the study confirms the necessity of procedural law reform, especially given the advancements in cyber crime during the era of the Industrial Revolution 4.0 and Society 5.0. The urgency of reforming Indonesia's criminal procedural law to combat cyber crime centers on incorporating artificial intelligence. From a progressive legal perspective, the use of artificial intelligence in procedural law is not intended to replace human law enforcement officers but to assist them, particularly in the face of continuously evolving cyber crime and technology.

Keywords: Artificial Intelligence, Progressive Law, Cyber Crime.

1 Introduction

The era of technological development demands every aspect to evolve, particularly striving to optimize various tools that support various aspects of human life. The development of technology specifically emphasizes effectiveness and efficiency as key words so that various human activities can be carried out effectively and efficiently with the development of technology. The advancement of technology is rapidly expanding, particularly during the Fourth Industrial Revolution and Society 5.0. In this period, technical breakthroughs are both substantial and beneficial, fostering the development of new technologies and generating previously non-existent innovations to aid social functions. A significant technological advancement aimed at enhancing human labor is the evolution of artificial intelligence (AI). [1]

Artificial intelligence (AI) is a branch of computer science focused on addressing cognitive challenges often linked to human intellect, including learning, invention, and analysis. Artificial intelligence (AI) is based on data which can then be processed to help solve problems and assist in societal tasks. In its development, artificial intelligence (AI) has become a global trend, making artificial intelligence (AI) a tool used almost worldwide to assist in various societal tasks. This is evidenced by the significant role of UNESCO in November 2021, which

formulated the "Recommendation on The Ethics of Artificial Intelligence," setting ethical standards for the use of artificial intelligence (AI) and adopted by 193 countries.

In the practice in Indonesia, the utilization and development of artificial intelligence (AI) are relevant to internet users, where in 2023 there were recorded 213 million or more than 77% of the population of Indonesia already being internet users, and also the growth of startups that utilize this technology to support business activities. [2] On the other hand, there is a negative risk that around 17% of jobs in Indonesia could be automated by artificial intelligence (AI) and have the potential to harm society if not managed properly. Therefore, for him, the development of artificial intelligence (AI) poses its own challenges for Indonesia in the future, including aspects of regulation, especially regarding the ethics and accountability of artificial intelligence (AI) usage.[3]

The use of artificial intelligence (AI) in Indonesia has also been oriented towards law enforcement processes in Indonesia. Artificial intelligence (AI) can be used as a tool to assist law enforcement officers in carrying out law enforcement, but it cannot be used to make decisions in cases, as deciding a case requires feelings, intuition, and conscience. Artificial intelligence (AI) can be utilized as a tool to assist law enforcement and crime prevention efforts. In the Indonesian National Police (Polri), for example, the use of artificial intelligence (AI) has been implemented in aspects such as online ticketing based on artificial intelligence (AI) and the use of facial sketches based on artificial intelligence (AI) to uncover legal cases.[4]

The practice of using artificial intelligence (AI) in the Indonesian National Police (Polri) is essentially one of the important orientations so that in the future artificial intelligence (AI) can be optimized in law enforcement efforts. In this regard, the use of artificial intelligence (AI) requires updates to criminal procedural law so that the use of artificial intelligence (AI) can be applied optimally. This study specifically focuses on two topics of discussion, namely: (i) the urgency of using artificial intelligence (AI) in the process of law enforcement against cybercrime, and (ii) efforts to update criminal procedural law related to law enforcement against cybercrime through progressive law-based artificial intelligence (AI).[5]

This research is a normative legal study that emphasizes primary legal sources, specifically legislation, with the application of legal ideas, principles, and theories. The principal legal document in this study is the Criminal Procedure Code (KUHAP). Secondary legal documents encompass journal articles, books, and further research findings pertaining to artificial intelligence (AI). Non-legal resources encompass language dictionaries. The methodology employed is both intellectual and legislative.

2 Result and Discussion

2.1 The Urgency of Using Artificial Intelligence (AI) in the Process of Enforcing Cybercrime Law

Artificial intelligence (AI) is a branch of computer science focused on addressing cognitive challenges often linked to human intellect, including learning, invention, and analysis. Artificial intelligence (AI) is based on data that can then be processed to help solve problems and assist in community work. As part of technological advancement, artificial intelligence (AI) undergoes periodic developments which initially stemmed from Alan Turing's ideas in 1950, focusing on future orientations to shape artificial intelligence that could be utilized to facilitate various human tasks.[6]

From 1957 to 1974, technological breakthroughs in computing facilitated increased data storage capacity and enhanced processing speed of computers. During this timeframe, researchers advanced machine learning (ML) techniques. The advancements in this domain have led institutions such as the Defense Advanced Research Projects Agency (DARPA) to allocate funds for AI research. The primary objective of this research was to ascertain if computers could replicate and interpret spoken language.[7] In the 1980s, the augmentation of available funds and the algorithmic instruments employed by scientists in AI development enhanced the efficiency of the development process. David Rumelhart and John Hopfield released a study on deep learning methodologies, illustrating that computers may acquire knowledge via experience.[8] Between the 1990s and the early 2000s, researchers accomplished several fundamental objectives in artificial intelligence, including the defeat of the world chess champion. In the contemporary period, the abundance of computer data and processing capacity has rendered AI research more prevalent and accessible than in past decades. Artificial intelligence is swiftly advancing towards artificial general intelligence, allowing software to do intricate tasks. Software is capable of creation, decision-making, and autonomous learning, functions that were once exclusively performed by people. Since the 2000s, particularly in the 21st century, the advancement and application of AI have significantly expanded alongside its enhanced quality. Artificial intelligence have the capacity to provide several advantages across multiple sectors.[9] AI technology often use machine learning and deep learning networks to address intricate issues with human-like intelligence. Artificial intelligence can analyze extensive data, discern patterns, recognize information, and deliver responses. This encompasses the application of AI in addressing challenges across several domains, including fraud detection, medical diagnostics, and business analytics.[10]

One advantage of AI is its ability to operate continuously, 24 hours a day, without fatigue or a decline in effectiveness, unlike humans. In other terms, AI can execute manual chores flawlessly. AI may be utilized to concentrate on repetitive and tedious operations, hence permitting the allocation of human resources to other business domains. Artificial intelligence may alleviate staff strain while streamlining all business-related operations. Another advantage is that AI can employ machine learning to evaluate extensive datasets more rapidly than humans. Artificial intelligence platforms can discern trends, evaluate data, and offer recommendations. Utilizing data forecasts, AI may recommend optimal future actions.[11] Another significant advantage of AI in streamlining human tasks is its capability in Intelligent Document Processing (IDP) to convert unstructured document formats into actionable data. For instance, converting corporate documents, including emails, photos, and PDFs, into structured data. IDP use artificial intelligence technologies, including natural language processing (NLP), deep learning, and computer vision, to extract, categorize, and validate data.[12] HM Land Registry (HMLR) administers property certificates for more than 87 percent of the land in England and Wales. The HMLR employees analyze and evaluate intricate legal papers pertaining to property transfers. The firm implements AI applications to automate document comparison, decreasing review time by up to 50 percent and streamlining the property transfer approval procedure. The aforementioned advancements in AI quality need its urgent implementation in law enforcement procedures.[13]

The implementation of Artificial Intelligence (AI) in law enforcement in Indonesia can play a significant role in enhancing efficiency, speed, and accuracy in handling various legal aspects. Here are three main roles of AI in law enforcement in Indonesia, such as: : (i) Data Analysis and Crime Detection, which includes: AI can be used to collect and analyze large-scale data from various sources, including criminal records, internet traffic, and other sources of

information. By integrating data from various sources, AI systems can assist police and law enforcement in making more informed decisions. (ii) Crime Pattern Detection: Through machine learning techniques, AI can process data to detect crime patterns that may be difficult to identify by humans. This can include identifying specific crime trends, potential perpetrators, or crime-prone locations.[14]

The orientation of AI usage in law enforcement practices in Indonesia has several advantages such as: AI can be used to automate some administrative processes in the legal system, such as document processing, scheduling of hearings, and monitoring case progress. This can help reduce the workload of legal officers and expedite the law enforcement process. AI systems can act as advisors to assist law enforcement in decision-making. Based on data analysis, AI can provide recommendations regarding prosecution strategies, appropriate punishments, or even the potential outcomes of trials. [15] With the increasing complexity of cyber threats, AI can be used to detect and prevent cyber attacks against legal systems. AI systems can identify suspicious behavior patterns and provide early warnings of potential attacks. AI can assist in digital criminal investigations by analyzing electronic evidence, tracing digital footprints, and identifying online criminals. Success in law enforcement against cybercrime often requires specialized skills that can be sharpened through AI integration.

In its development, the use of AI has also been adopted by various institutions, one of which is the Indonesian National Police (Polri) in several aspects, including: in electronic traffic fines, there has been progress in face recognition developed by an Indonesian AI startup, Nodeflux, and used by Polri through the Electronic Traffic Law Enforcement (ETLE) Program. Furthermore, the use of AI in optimizing tasks of the Indonesian National Police (Polri), includes : First, Electronic Traffic Law Enforcement (E-TLE) or electronic ticketing using traffic light surveillance cameras, is also planned to employ drones. Second, the Integrated Vehicle and Identification System (IVRIS), a system for recognizing and tracking vehicle license plate numbers through cameras. Third, tracking CCTV with face recognition technology against perpetrators of crimes. Fourth, tracking the position of criminals using satellite and cellular BTS (tower) triangulation methods. Fifth, the Directorate of Cyber Crime (Dittipidsiber) enforces the law against cyber crimes, such as computer crime and computer-related crime.[16] Sixth, Cyber-drones, an application system for controlling and blocking the spread of negative content on the internet, replacing Trust+ which acts as virtual police. Seventh, LRAD (long-range acoustic device) tactical vehicles for emitting loud sound to disperse crowds/demonstrators.[17] Eighth, Faro Freestyle Hand Held 3D Scanner, for 3D crime scene reconstruction, reaching hidden points that cannot be reached by regular camera scans. Ninth, Cellebrite, an Israeli-made tool and software used by the Indonesian National Police (Polri) to hack into criminal mobile phones (evidence). Tenth, Mobile Automated Multi Biometric Identification System (MAMBIS), used by INAFIS for criminal investigations through fingerprint and retina scanners connected to online population data and various other AI-based technologies.[18]

From the above description, considering the characteristics of technology-based cyber crimes, it is necessary to optimize AI technology in law enforcement related to cyber crimes. The application of AI technology in law enforcement in Indonesia can help improve the efficiency, accuracy, and accountability of the legal system, while also providing better support for law enforcement officers in carrying out their duties. However, ethical and privacy aspects should also be considered in the implementation of this technology. Nevertheless, the use of AI in law enforcement, especially by the police, does not mean completely eliminating the role of humans in the law enforcement process. This further emphasizes that AI is essentially aimed at assisting

law enforcement processes, while in practice, the role of humans as law enforcers is still necessary even though AI-based technology is increasingly being used extensively.

From the analysis above, the urgency of using Artificial Intelligence (AI) in the process of law enforcement against cyber crimes is necessary because cyber crimes are evolving massively in line with technological advancements, thus law enforcement efforts require optimization in technological developments, including Artificial Intelligence (AI). Nevertheless, the use of AI in law enforcement does not mean completely eliminating the role of humans in the law enforcement process. This further emphasizes that AI is essentially aimed at assisting law enforcement processes, while in practice, the role of humans as law enforcers is still necessary even though AI-based technology is increasingly being used extensively.

2.2 Legal Procedure Amendment Related to Cybercrime Law Enforcement Through Progressive Law-Based Artificial Intelligence (AI)

The increasing prevalence of cyber crimes has led to various legal loopholes, rendering some aspects of cybercrime unable to be processed under Indonesian positive law due to lack of detailed regulation. Referring to Andi Hamzah's view that cybercrime is a crime in the field of computers in general, it can be interpreted as the illegal use of computers. From that perspective, it can be concluded that cybercrime has several elements such as: being unlawful in nature, utilizing computer devices or other digital devices, and its locus of crime generally occurring in the virtual world (the internet).[19] The advancement of technology and information is undoubtedly pertinent to cybercrime, which is intrinsically connected to the notion of progressive law as articulated by Satjipto Rahardjo. Satjipto Rahardjo is a legal scholar who perceives social and communal realities as domains that require exploration and integration with both theoretical and practical dimensions of law. Satjipto Rahardjo can be classified as a legal scholar with a sociological viewpoint. Sociological jurisprudence refers to the legal thinking that emphasizes sociological factors within the philosophical language of jurisprudence. This should be differentiated from the concept of social thinking that analyzes law, generally known as the sociology of law. There are three primary distinctions between sociological jurisprudence and the sociology of law: Sociological jurisprudence originates from legal science but examines the socio-community realities that impact the law. Sociological jurisprudence constitutes a branch of Legal Science. This is distinctly unlike from the sociology of law, which is grounded in the examination of social science.[20]

Secondly, sociological jurisprudence perceives law as norms grounded in values to be implemented within social-community contexts. The socio-community context, where law evolves, is more recognized, yet law continues to be perceived as standards grounded on values. This contrasts sharply with the sociology of law, which perceives law as codified regulations established by the state (positive law). The sociology of law interprets law as a social "product" in a limited manner.[21] Thirdly, while sociological jurisprudence incorporates insights from several disciplines, especially social sciences, to enhance legal studies, it preserves the distinct identity and nature of law as a field that provides legal remedies to situations typically termed prescriptions. This rule is preserved in social jurisprudence. The unique aspect is that the sociology of law, grounded in social science, provides a depiction of social reality via the lens of law. According to the distinction between sociological jurisprudence and sociology of law mentioned above, Satjipto Rahardjo is categorized as a proponent of sociological jurisprudence.

Satjipto Rahardjo, the proponent of progressive law, embodies a "intellectual unrest" over the ambiguous trajectory of law enforcement tactics. According to Satjipto Rahardjo, the current

state of law enforcement following reform indicates that the law appears to have "lost its parent." [22] The law and its mechanisms exist, although the direction in which the law will go is uncertain. The law resembles a disoriented voyager devoid of a guiding compass. The current state of law enforcement prompted Satjipto Rahardjo to advocate for the concept of progressive law. From Satjipto Rahardjo's viewpoint, progressive law is a legal paradigm that should be seen as an option for interpreting Indonesia's legal reality, which is characterized by instability. [23] Progressive law is analogous to a guiding compass for Indonesian jurisprudence, enabling it to serve mankind and uphold human dignity. [24] Consequently, progressive law posits that legal frameworks exist, are relevant, and are human-centric, rather than the inverse, wherein individuals are compelled to adhere to an ambiguous legal system.

A defining feature of progressive law is its perception of law as an evolving process (law as a process, law in development). This affirms that law is not absolute, nor is it exempt from scrutiny. Progressive legislation, as a growing entity, encourages us to view it as an aspect of society reality subject to change at any moment. [25] The concept of legislation being amenable to modification underscores its inherent capacity for continual enhancement and adaptation. The law should not stay inflexible and stagnant in its perception of social realities. In this perspective, law is defined as ever evolving and adapting to the dynamics of mankind. From this viewpoint, progressive law perceives legal change as unavoidable in adapting to societal advancements.

The increasing prevalence of cybercrime demands the use of technology for prevention and law enforcement, including through AI. Prevention and enforcement of cybercrime through AI specifically necessitate revisions to the Criminal Procedure Code. Revision of the Criminal Procedure Code as part of criminal procedural law is necessary because by affirming the use of AI in criminal procedure law, it can ensure legal certainty while simultaneously ensuring progressive and fair law enforcement as envisioned by progressive law.

3 Conclusion

The urgency of using Artificial Intelligence (AI) in the enforcement process of cybercrime law is necessary because cybercrime itself is developing massively in line with technological advancements, thus law enforcement efforts require optimization in technological advancements, including Artificial Intelligence (AI). However, the use of AI in law enforcement does not mean completely eliminating the role of humans in the law enforcement process. This further emphasizes that AI is intended only to assist the law enforcement process, while in practice, the role of humans as law enforcers is still necessary even though AI-based technology is already being used extensively.

Prevention and law enforcement through AI, especially in cybercrime, essentially require revisions to the Criminal Procedure Code (KUHAP). Revisions to the KUHAP as part of criminal procedural law are necessary because with the affirmation of the use of AI in criminal procedural law, this can ensure legal certainty while also ensuring progressive and just law enforcement as envisioned by progressive law.

References

- [1] M. A. Zhumadilova, Y. S. Dussipov, G. I. Arginbekova, B. Z. Aitimov, and Y. V. Milova, "Civil Legal Handling of Electronic Transactions: The Essence and Modern Realities," *Rev. Direito, Estado e Telecomunicacoes*, vol. 15, no. 1, pp. 160–176, 2023, doi: 10.26512/istr.v15i1.43829.
- [2] R. Yogaswara, "Artificial Intelligence Sebagai Penggerak Industri 4.0 dan Tantangannya Bagi

- Sektor Pemerintah dan Swasta,” *Masy. Telemat. Dan Inf. J. Penelit. Teknol. Inf. dan Komun.*, vol. 10, no. 1, p. 68, 2019, doi: 10.17933/mti.v10i1.144.
- [3] J. L. Skeem and J. Monahan, “Current directions in violence risk assessment,” *Curr. Dir. Psychol. Sci.*, vol. 20, no. 1, pp. 38–42, 2011, doi: 10.1177/0963721410397271.
- [4] M. Syahnaz and R. Fithriani, “Utilizing Artificial Intelligence-based Paraphrasing Tool in EFL Writing Class: A Focus on Indonesian University Students’ Perceptions,” *Scope J. English Lang. Teach.*, vol. 7, no. 2, p. 210, 2023, doi: 10.30998/scope.v7i2.14882.
- [5] S. Suharyono, Khalisah Hayatuddin, Muhammad Sadi Is, “The Design of Consumer Legal Protection Arrangements in Indonesia Based on Artificial Intelligence,” *Law Dev. J.*, vol. 6, no. 1, pp. 35–52, 2024.
- [6] A. Rosemann and X. Zhang, “Exploring the social, ethical, legal, and responsibility dimensions of artificial intelligence for health – a new column in Intelligent Medicine,” *Intell. Med.*, vol. 2, no. 2, pp. 103–109, 2022, doi: 10.1016/j.imed.2021.12.002.
- [7] Y. Razmetaeva, Y. Barabash, and D. Lukianov, “the Concept of Human Rights in the Digital Era: Changes and Consequences for Judicial Practice,” *Access to Justice East. Eur.*, vol. 5, no. 3, pp. 41–56, 2022, doi: 10.33327/AJEE-18-5.3-a000327.
- [8] KOMINFO, “Sekjen Kominfo: Penggunaan AI Harus Sesuai Dengan Nilai Etika Di Indonesia,” 2023. <https://aptika.kominfo.go.id/2023/11/sekjen-kominfo-penggunaan-ai-harus-sesuai-dengan-nilai-etika-di-indonesia/>
- [9] A. M. Rahmani *et al.*, “Artificial intelligence approaches and mechanisms for big data analytics: a systematic study,” *PeerJ Comput. Sci.*, vol. 7, pp. 1–28, 2021, doi: 10.7717/peerj-cs.488.
- [10] A. Qasim and F. F. Kharbat, “Blockchain technology, business data analytics, and artificial intelligence: Use in the accounting profession and ideas for inclusion into the accounting curriculum,” *J. Emerg. Technol. Account.*, vol. 17, no. 1, pp. 107–117, 2020, doi: 10.2308/jeta-52649.
- [11] S. Mulisi, “Argumentasi Hukum Kedudukan Kecerdasan Buatan Di Indoneisa,” 2018.
- [12] R. Bin Mohamad and I. W. Rideng, “The Legal Pluralism in Law Education in Indonesia,” *Sociol. Jurisprud. J.*, vol. 4, no. 1, pp. 1–5, 2021, doi: 10.22225/scj.4.1.2635.1-5.
- [13] Marzuki, U. Widiati, D. Rusdin, Darwin, and I. Indrawati, “The impact of AI writing tools on the content and organization of students’ writing: EFL teachers’ perspective,” *Cogent Educ.*, vol. 10, no. 2, 2023, doi: 10.1080/2331186X.2023.2236469.
- [14] A. Krausová and V. Moravec, “Disappearing Authorship: Ethical Protection of AI-Generated News from the Perspective of Copyright and Other Laws,” *J. Intellect. Prop. Inf. Technol. E-Commerce Law*, vol. 13, no. 2, pp. 132–144, 2022.
- [15] K. Joyce *et al.*, “Toward a Sociology of Artificial Intelligence: A Call for Research on Inequalities and Structural Change,” *Socius*, vol. 7, 2021, doi: 10.1177/2378023121999581.
- [16] D. Hendarsyah, “E-Commerce Di Era Industri 4.0 Dan Society 5.0,” *IQTISHADUNA J. Ilm. Ekon. Kita*, vol. 8, no. 2, pp. 171–184, 2019, doi: 10.46367/iqtishaduna.v8i2.170.
- [17] M. Harun, “Philosophical Study of Hans Kelsen’s Thoughts on Law and Satjipto Rahardjo’s Ideas on Progressive Law,” *Walisongo Law Rev.*, vol. 1, no. 2, p. 199, 2019, doi: 10.21580/walrev.2019.2.2.4815.
- [18] A. Dermawan, E. Saputra, and J. E. Hutagalung, “Peran Masyarakat Dalam Menaati Hukum Dan Mendukung Perkembangan Teknologi Komputer Dalam Bisnis Digital,” *Community Dev. J. J. Pengabd. Masy.*, vol. 2, no. 3, pp. 569–573, 2022, doi: 10.31004/cdj.v2i3.2542.
- [19] X. Oberson, “Taxing artificial intelligence,” *Tax. Artif. Intell.*, vol. 45, no. 3, pp. 1–250, 2024, doi: 10.4337/9781035307555.
- [20] A. Hamzah, *Terminologi Hukum Pidana*. Jakarta: Sinar Grafika, 2008.
- [21] S. Rahardjo, *Membedah Hukum Progresif*. Jakarta: Kompas, 2008.
- [22] A. Rifai, *Menggapai Keadilan Dengan Hukum Progresif: Sebuah Upaya Menyempurnakan Putusan Hakim Pada Keadilan*. Makassar: CV Nas Media Pustaka, 2020.
- [23] A. F. Susanto, *Filsafat Dan Teori Hukum Dinamika Tafsir Pemikiran Hukum Di Indonesia*. Jakarta: Prenada Media Group, 2019.
- [24] Suteki, *Desain Hukum Di Ruang Sosial*. Semarang: Thafa Media, 2013.
- [25] Juanda, “ITSEC Asia Bersama POLRI Ungkap Peran Penting Cybersecurity,” 2023.

<https://www.komite.id/2021/11/03/itsec-asia-bersama-polri-ungkap-peran-penting-cybersecurity/>