Artificial Intelligence: Implementation in Legal Services (Comparative Study on China, United Stated and Indonesia)

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Abstract

As one of 4.0 revolution technologies, artificial intelligence or AI has been used in various areas, including legal, to help humans do cognitive tasks. It brings out the authors' attention to examine the use of AI in legal areas and how AI works has to be regulated. Then, the development of AI in China, the United States, and Indonesia are subject of the author's examination. The study uses a normative legal research method with a legal, conceptual, and comparative approach. Later on, the study finds out that the implementation of AI in legal has been used both in the private and public sectors, including judiciary systems. The type of AI used in legal fields is a machine and deep learning, big data exchange, optical character or facial recognition, and robotic process automation. It concludes that most AI applications in private sectors are used as platforms to analyze or make documents, provide portal information, and consult or find the right lawyer. Meanwhile, most of the AI application in the public sector is used for digitalizing the administration process, evidence and documents, portal information, and recidivism systems for judge's consideration of defendants. In the judiciary system, AI has helped minimize judges' bias to reach fairness and improve time and cost efficiency. However, the regulation shall be existed to reduce the risks that may arise, provide legal protection for its users, and avoid the development of AI that can harm the public.

Keywords
Artificial Intelligence, Law, Legal Service, Judicial Systems, AI regulations

1. Introduction
Artificial intelligence as a technology of the 4.0 revolution has become one of the most important factors since 2010 (Patnaik and Ravi 2021). Patnaik and Ravi (2021) said that this is because AI can store large amounts of data and process it at a very high speed, solve problems, and compete with human capabilities. AI applications can be easily found on voice services such as Siri, Ok Google, Alexa, automatic customer service used by banking and internet services, e-commerce, autonomous vehicles, curriculum vitae screening of job applicants, and even AI capture clearer images in surveillance videos. In addition to these fields, AI is also carried out in legal area. The use of technology in the legal area is known as LegalTech terminology (Mania 2022). Szostek (2021) said that LegalTech combines technology to provide legal services. Collaboration between technology and law, LegalTech allows as a means or facility to support efficiency and justice for its users (Zatucki 2021).

In the legal field, recent advances in AI provide ideas for building predictive models that can be used to reveal the patterns that drive court decisions. It can be helpful for lawyers and judges as a tool to quickly identify cases and extract patterns that lead to specific choices (Aletras et al. 2016). Some countries, such as China and the United States, have used AI in their justice systems (Contini 2020). It is done by seeing AI's potential to improve procedural and administrative efficiency, help decision-making, and produce consistent predictions (Reiling 2020). Seeing the potential use of AI, especially in legal area, this research then analyzes the practice of using AI in the direction and the development of AI regulation in China, the United States, and Indonesia. It is intended to provide an overview of current practices and how the potential use of AI in the legal field in Indonesia can be carried out.

1.1 Objectives

This study aims to analyze the implementation of AI in the field of law, including how the development of AI regulation in China, the United States, and Indonesia. This research hopes to provide the extent to which AI has been applied to the legal field and how the government regulates the development of AI technology.

2. Literature Review

AI has several meanings, such as China defines AI as a machine miming cognitive functions associated with humans (McKinsey 2017). The United States defines AI as a machine-based system that can, for a set of human-defined goals, make predictions, recommendations, or decisions that affect a real or virtual environment (State.Gov 2020). The OECD defines AI as a machine-based system that can, for a set of human-defined goals, make predictions, recommendations, or decisions that affect a real or virtual environment (OECD 2019). Looking at these understandings, at least there are similar components of the definition of AI, namely the nature of automation, having performance derived from human intelligence, and having the same goal, namely, to help human cognitive tasks.

The development of AI has appeared since the 1930s. Gregory Powell and Mike Donovan made three laws for robots. First, robots must not hurt humans or allow humans to damage themselves. Second, the robot must obey the orders given by humans unless it is given the mandate to damage itself. Third, the robot must protect itself as long as the protection does not conflict with the first law and the second law (Haenlin and Kaplan 2019). In addition, Alan Turing developed AI by creating The Bombe machine in 1940, which German soldiers used in the Second World War to decipher the Enigma code (Muggleton 2014). Alan Turing explains how to make an intelligent machine and, in particular, how to test the machine's intelligence. Until now, Test Turing has still been considered a benchmark for identifying intelligence from artificial systems (Muggleton 2014).

Since the 1940s, AI scientists have been working to replicate the structure and function of the human brain to produce similar cognitive abilities for AI (Adams 2019). AI, an intelligent system capable of making its own decisions, will represent the direction of the development of computer functions related to human intelligence, such as reasoning, training, and problem solving (Khisamova 2019). In other words, AI is the transfer of the abilities of human mental activity to the field of computers and information technology, but without inherent human vices (Signorelli 2018). Based on the performance of the human brain, which is the idea in developing AI, there are three main ways of working that are applied, namely: (a) speech recognition or the process of learning by voice; (b) natural language processing or the process of learning with words that are translated into numbers in AI; and (c) computer vision or the learning process by looking at where AI learns to interpret and understand the visual world (George and Thomas 2019). These three ways of working are then developed and collaborated to become the basis of AI programs, namely machine learning and deep learning.

The researchers used the data to form a pattern so that deep learning or machine learning could learn from these data patterns and then make predictions based on what he has learned. For example, if humans consider a graph of ad spend versus sales in a company, humans can plot the data and observe up to three dimensions. Nevertheless, deep learning works with more numerous data compared to machine learning. Based on the description above, AI's work depends on the final goal. For example, in autonomous vehicles, AI uses deep understanding to produce how autonomous vehicles can park their cars automatically (Ma et al. 2020).

Based on how it works, AI is divided into two classifications, the first is the classification of AI based on similarities to humans, and the category of AI is based on machine capabilities (Hassani et al.2020). The category of AI based on similarities with humans is divided into four: reactive machines, limited memory, mind theory, and self-awareness. Meanwhile, the classification of AI based on machine capabilities is divided into three, namely Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI), and Artificial Super Intelligence (ASI). ANI is an AI system that refers to AI that can only perform specific tasks based on what has been programmed. While AGI is an AI system where AI can learn, understand, and function entirely like humans. Third, ASI is an AI system with the highest level of intelligence where AI becomes self-aware. For now, the development of ASI is still speculative (Pohl 2015).

AI Risk and Security describe at least four risk categories in using AI, as illustrated in Figure 1: data-related risks, AI/ML attacks, testing, and trust and compliance (AIRS 2021). As in Figure 1, it shows that data-related risks refer to learning limitations and data quality that have the potential to provide incorrect or poor prediction results or fail to operate. Meanwhile, AI/ML attacks refer to data privacy attacks, data poisoning training, adversarial inputs, and

extraction models that have the potential to affect AI operational processes and endanger data privacy. Then testing and trust refers to incorrect output, lack of transparency, and bias that can potentially increase risks associated with unfair outcomes or discrimination. Last, compliance refers to the non-compliance policy. Thus, it is necessary to establish regulations to regulate the use and governance of AI /ML to anticipate these risks. (Figure 1)

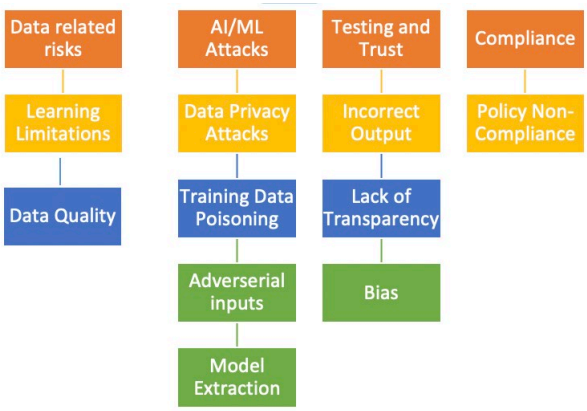

Figure 1. Risks of Using AI

3. Methods

The research used is normative legal research that aims to find the rule of law or legal principles by using sources of legal materials such as laws and regulations, court decisions or decrees, and the opinions of scholars. The approach method used in this study is a conceptual approach method used to understand concepts related to naming in a law or regulation to be a foothold to make legal arguments, a statutory approach method used to study the development of AI regulation, and a legal comparison approach method used to compare the legal system or legislation of a country to know the development of arrangements in each country.

4. Data Collection

The data used are primary and secondary data with literature study techniques sourced from laws and regulations, books, journals, articles, and research results online through official websites.

5. Results and Discussion

5.1. AI Practice in Legal Area in China, the United States, and Indonesia

AI has been used in various fields, including the area of law, both by the private sector and the courts. From the search results of 16 platform websites that use AI, it was obtained that AI development has been carried out by China, the United States, and Indonesia by having similar forms of action, namely in the form of portal information and platforms for online consultation.

Table 1. AI Practice in Legal Area in China, United States and Indonesia

Service	China	Indonesia	The United States
Online consultating	√	√	√
Information portal	√	√	√
Legal analysis	√		√
Electronic certification		√	

As in Table 1, in China, AI is used by platforms such as Lawminer, Fagougou, and Yingle for online consulting platforms with big data exchanges. Not only that, but Law Info China also manages the platform as an information portal. In addition, AI is used to perform analysis by Alpha with a machine and deep learning. In the United States, the use of AI as an online consulting platform is offered by Trustate and Clientware. In addition, the platform as an information portal is carried out by Trellis Research. As for the analysis of documents carried out by Everlaw, Ontra provides legal services for autonomous contract making and online consulting services. As for Indonesia, AI is used for online consulting platforms provided by Lawgo, Lexar, and Legalku. Meanwhile, PrivyID provides electronic

certification with facial recognition and machine learning, and information portal platforms are provided by hukumonline. Thus, the use of AI in the legal field by the private sector is for the following services:

a. **Document Analysis Platform:** Platforms with machine learning can provide analysis of documents, including case analysis. Its use can be carried out by various parties, including lawyers.
b. **Online Consultation:** Platforms with machine learning offer services to consult directly with lawyers or provide services for users to choose their lawyers according to the desired criteria. In addition to consulting, users can also communicate with the same platform.
c. **Document Automation:** Platforms with machine learning offer services to consult directly with lawyers or provide services for users to choose their lawyers according to the desired criteria. In addition to consulting, users can also communicate with the same platform.
d. **Electronic Certification:** It provides electronic certification services such as digital signatures and digital identities.
e. **Information Portal:** This platform makes research on legal products faster because it can easily access the information portal and information obtained in real-time.

Based on the services provided above, the use of AI that has been carried out is AI that can only perform specific tasks such as document analysis and an information portal. Looking at the limitations of functions that AI can do, it shows that AI development currently is AI with an ANI classification or weak AI. In addition, analysis results from various websites that use AI show that the forms of AI developed were machine learning and deep learning, facial recognition, and big data exchange.

Table 2. AI Practice in Judiciary System in China and United States

China		**United States**	
Program	**Types of Services**	**Program**	**Types of Services**
Guiyang Model	Platform for legal exchange of data	Facial Recognition	Facial recognition to enter the court system where improves security and efficiency
Shanghai Model Intelligent (auxiliary handling system for criminal cases)	Platform for evidence mapping for several cases, such as theft, murder, and telecommunications fraud as well of reviewing evidence to find out the lack of evidence in a case.	E-filed	To classify and store documents (e-filed). The software works by classifying incoming e-fillings, then analyzing the existing information and storing it into a court case management system
Hangzhou Model (Internet court)	Online resolution of e-commerce related dispute cases and launch of AI judges	JIA Chatbot	To provide information to the court-related public by studying frequently asked questions
Suzhou Model (Intelligent Court)	Electronic filing after case data has been received, speech recognition system, presentation of evidence, dual display system for case documentation	Compass in U.S. Criminal Court	Calculated the recidivism score of the defendant and also the basis for judge's consideration for trial decision, but the judgement produced by Compass wasn't binding, so the decision remained in the hands of the Judge

Besides the private sector's use, the courts have also used AI. As in Table 2, in China, AI is used in administration and public services through data exchange platform services, evidence mapping, AI Judge/guidance robots, and electronic archiving and speech recognition systems. Guiyang Model is a legal data exchange platform by the Guiyang Regional Court (Wang 2020). In addition, the Intelligent Auxiliary Handling System for Criminal Cases or the Shanghai Model is a platform for mapping evidence and reviewing evidence to find out the lack of evidence for a case carried out by the Shanghai judiciary using optical character recognition and natural language processing (Shi et al. 2021). Internet Court or the Hangzhou Model is a platform for online case resolution by recording court procedures, authenticating electronic evidence, providing smart contracts and electronic signatures, as well as AI judges to help provide information services to the public with machine learning and blockchain by the People's Court of Shangcheng District

(Papagianneas 2021). Not only that, the Intelligent Court or the Suzhou Model is used for electronic archiving and presentation of evidence with a speech recognition system, which uses optical character recognition and speech recognition by the People's Middle Court of Suzhou (Wang 2020).

Whereas in the United States, AI is used for administration, public services, and judges' decision processes in the form of electronic filings, chatbots, facial recognition systems, and recidivism platforms. Oregon courts use facial recognition to make it easier for judges to enter the court system (Committee 2020). The Palm Beach County, Florida courts used robotic process automation to classify and store documents (electronic filing) (Committee 2020). Meanwhile, New Jersey Envision developed the JIA (Judiciary Information Assistant) chatbot to provide public information services (Committee 2020). Furthermore, the criminal court system developed Correctional Offender Management Profiling for Alternative Sanctions (Compass) with machine learning to calculate the recidivism score of the accused in court. Compass is also the basis for the judge's consideration to impose a pre-trial detention decision, but the judgment produced by Compass is not binding, so the decision remains in the hands of the judge (Contini 2020). The courts in Indonesia have not used AI in the process or the court system. However, as stated in Supreme Court Regulation No.01/2019 on The Administration of Cases and Proceedings in Courts, technology can be used in Courts. In addition, the Constitutional Court plans to build ETERNAL (Technological and Modern Ecosystem and Digital Cultural Transformation) to create a Judiciary Administration System (JAS) and General Administration System (GAS) with AI technology for use in the judiciary (MKRI 2021). Based on the previous paragraph, the use of AI in legal area for courts is the following services:

a. **Data Exchange Platform**: This platform is a software for the exchange of case data between law enforcement, prosecutors, and courts to streamline court procedures.
b. **Mapping Evidence Tools:** The mapping evidence tool is used to view evidence documents from some instances to ensure that the evidence has complied with the evidentiary requirements in the trial process and makes it easier to find evidence deficiencies.
c. **AI Judge/Guidance Robots:** The AI Judge or Guidance Robots facilitates the administration of cases in court by hosting a group chat which will later help the parties to the dispute to prepare for the next steps in the litigation process, such as defense, proof, and cross-examination. It can also guide the actions that the community must take if they want to file a dispute settlement by studying thousands of cases and the law itself.
d. **Electronic Filing:** This electronic filing works by creating an automatic electronic file after the case submission is received. Not only that, but electronic filing can also serve for mass judicial data societies to ensure that the verdicts in similar cases are in line with those presented across the country. Apart from being a "document storage," electronic filing can recognize some types of case submissions by emailing relevant documents to judges who have been assigned to a particular case.
e. **Speech Recognition System:** The voice recognition system used by the court serves to present voice-activated evidence and turn a live conversation into a transcript.
f. **Chatbots:** The chatbots used by the court serve to provide information to the public related to the court by having studied thousands of questions, standard operating procedures, manuals, and other sources of information.
g. **Facial Recognition System:** The facial recognition system used by the court makes it easier for judges to access the court system to reduce the occurrence of input errors or forgetting passwords.
h. **Recidivism Platform:** This Recidivism platform that works with machine learning calculates the defendant's recidivism score in court. Nevertheless, the results issued by this platform are not binding, so the decision remains in the hands of the judge entirely.

5.2. Development of AI Regulations in China, the United States, and Indonesia

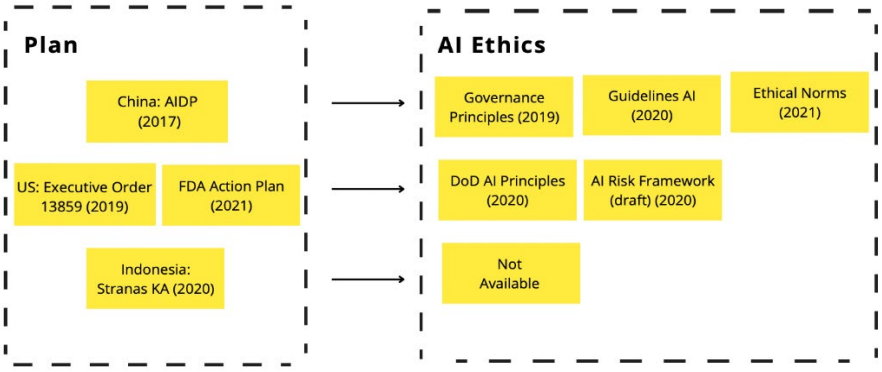

Figure 2. Stages Development of AI Plans or Ethics in China, the United States, and Indonesia

As described in Figure 2, the development stage of AI regulation in China, the United States, and Indonesia is divided into 2 (two) stages, namely determining the development plan and preparing principles for the use of AI. When deciding on the AI development plan, China formulated the program in the New Generation AI Development Plan (AIDP) in 2017, which determined the direction of AI development nationwide. In AIDP, there are three main focuses that China wants to achieve. First, in 2020, AI will become an essential driver of economic growth. Second, in 2025 China will be at the forefront of AI technology and its applications. Last, by 2030 China will be at the top level in all AI theories, technologies and applications so that China becomes a global center for AI technology and economy with applications that are scaled and integrated production segments, social governance as well as national security and defense with a globally leading set of AI technology innovation bases and talents.

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The development of AI-related regulations in the United States is carried out by preparing guidelines for the federal level or agencies to develop AI in general in 2019, as outlined in Executive Order 13859. The AI development plan is also carried out sectorally, such as the AI development plan in the health industry in 2021, as outlined in the FDA Action Plan. Furthermore, the United States and China have compiled AI principles as guidelines in developing AI by various parties to protect users. China set the AI principles in the Governance Principles 2019, then expanded by the Ethical Norms in 2021. The principles of AI are also accommodated in Stranas-KA by Indonesia. Meanwhile, the principles of AI in the United States are regulated in several regulations, namely in the preparation of guidelines in Executive Order 13859 and Department of Defense AI principles for the Department of Defense, as well as the draft AI Risk Framework. The principles of AI development in each of these countries are similar as described in Table 3, including:

a. **Advancement of Human Welfare:** This principle emphasizes that AI development must respect human rights, and AI development must be centered on the interests of the general public. When developing AI, it must prioritize the public interest, can improve people's livelihoods, and improve economic development.
b. **Promotion of Fairness, Justice, and Transparency:** This principle emphasizes that AI development must be able to promote justice without bias and equality and can transparently explain how AI is developed and operational such as providing services to all circles of society, including to people with disabilities or the elderly.
c. **Protection of Privacy and Security:** This principle emphasizes that the development of AI must respect and protect data privacy, protect the rights of individuals and participate in the process of collecting, storing,

processing, using, and other aspects of personal information, such as not being able to collect and use personal information illegally by stealing, tampering or leaking.

d. **Assurance of controllability and trustworthiness:** This principle emphasizes that to achieve trustworthy AI, control in the development of AI must be under humans, such as giving the user the right to accept or refuse AI services, the right to shut down the operation of AI systems at any time.
e. **Strengthening of accountability:** This principle emphasizes that AI development must clearly describe who is the party responsible for AI, from the processing of data to the operation of AI systems.
f. **Purposeful and perfomance driven**: Providers/developers should look for opportunities to design, develop, acquire, and use AI, where the benefits of doing outweigh the risks, and the risks can be assessed and managed.

Table 3. Principles on AI Regulation in China, the United States, and Indonesia

AI Principles	China	Indonesia	The United States
Advance of human welfare	√	√	√
Promotion of fairness, justice and transparency	√	√	√
Protection of privacy and security	√	√	√
Assurance of controllability and trustworthiness	√	√	√
Strengthening of accountability	√	√	√
Improvements to the cultivation of ethics	√	√	-
Purposeful and performance-driven	-	-	√

China regulates AI ethics in the Guidelines for constructing a national new generation of artificial intelligence standards systems (Guidelines AI 2020). This document is a guide to promoting the continuous development of AI, the optimization of AI technologies in open-source ecosystems and open industries, giving a leading role to basic general-purpose standards, ethical standards, security standards, and privacy standards to guide the formulation, revision, and coordination standards of national AI and to form patterns in developing comprehensive and standardized AI. In this document, the government also describes the fields of AI development (manufacturing, education, homes, courts, etc.) and what AI is used (machine learning, quantum intelligent computing, natural language processing, and others.

More specifically, China has developed the ethics of using AI in management and research and development in the Ethical Norms 2021, where ethics apply since procurement (supply) and use (use). At the procurement (supply) stage, it is required to strengthen quality monitoring and assessment of the use of AI products and services, avoid hazards to user health, property, and privacy caused by problems such as product design and defects and not operating, sell, or provide products and services that are not following quality standards (strengthen quality control). At the use stage, it's required to promote goodwill use, strengthen pre-use demonstrations and assessments of AI products and services, provide a complete understanding of the benefits of products and services, and provide a thorough understanding of the scope of application and the harmful effects of AI products and services as well as prohibitions for the use of AI products or services that do not comply with laws and regulations, ethics, standards or norms, as well as prohibiting the use of AI products or services to engage in illegal activities including those that endanger national security, public safety, production safety, and harm the public interest (prohibit violations and malicious use). Meanwhile, the preparation of AI ethics in the United States is still under discussion, while Indonesia's AI ethics and principles compose in Stranas-KA. Furthermore, AI-related statutes have not been expressly regulated in the United States, China, and Indonesia. However, the components related to AI development have been regulated in the relevant regulations in each country. The AI-related features are privacy and personal data protection, and cybersecurity. China first regulates algorithms where algorithms are related to AI because algorithms are the core program of how AI operates.

Security Regulations have relevance to AI regulations because AI is an electronic system so security systems can maintain the safety of AI systems. The security and protection of personal data arrangements are regulated in several regulations in China, namely the Cyber Security Law (CSL), the Data Security Law (DSL), and the Personal Information Protection Law (PIPL). The three regulations regulate how the process of collecting and processing personal data is carried out and the obligation to ensure the security of the personal data. In Indonesia, both security and data protection refer to Law No. 11 of 2008 about Electronic Information and Transactions along with Law No.19 of 2016 about amendments to the Electronic Information and Transaction Law (UU ITE) and Government Regulation No. 71 of 2019 About the Implementation of System and Electronic Transactions (PP 71/2019). UU ITE emphasizes the obligation of the electronic system operator, in this case, an AI provider, to guarantee the security system on its electronic system. In addition, it emphasizes the consent of data subjects in collecting and utilizing personal data. As

for the United States, there is no single regulation of personal data but refers to the arrangements in each state and sectoral.

Regulations already owned by China and have not been regulated in the United States and Indonesia are regarding algorithms regulated in the Internet Information Service Algorithmic Recommendation Management Provisions or algorithm rules that take effect in 2022. Article 2 of the Algorithm Rule stipulates that this regulation applies to developers or users of algorithm technology that refers to the use of generative or synthetic type, personalized recommendation type, ranking and selection type, search filter type, dispatching, and decision-making type. Algorithm Rule regulates obligations in using algorithms such as transparent disclosure, ethical use of recommendation algorithms, and strict oversight on services with "public opinion and social mobilization capacities." With the Algorithm rule made by the Chinese government, it marks China's further efforts in regulating AI. (Table 3).

6. Conclusion

AI has been used in the field of law, both by the private sector and the courts. The United States and China have used AI in systems and court proceedings, which Indonesia has not done. Therefore, Indonesia needs to initiate the use of AI in courts. Regarding regulatory developments, the stages of development in China, the United States, and Indonesia have similarities, namely the development plans and guidelines that contain the principles of AI. Regarding regulatory development, China and Indonesia have first compiled ethics for using AI, which in the United States is still being discussed. Of the three countries studied, neither China, the United States, nor Indonesia has specifically regulated AI at this time. However, the components related to the use of AI in the form of personal data protection and cybersecurity have been owned by each country. Although in Indonesia, data protection regulations have not been expressly regulated. In terms of statutes, China has first regulated the issue of algorithms that have an essential role in the development of AI. Looking at the use of AI in the future, the development of AI settings will continue to evolve to ensure protection for users. Based on paragraph above, there are several proposed improvements should be done such as Indonesia needs to start the AI development in courts such as in court administration process to improve the efficiency in courts. Referring to AI regulations, Indonesia government should formulate AI ethical guidelines as a guide in the use of AI and need to immediately regulate the protection of personal data in more specific regulations therefore, the Personal Data Protection Law needs to be passed immediately by the Government.

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Biographies

Precia Jacey is a student in Business Law Program, Law Department, Faculty of Humanities, Bina Nusantara University, Indonesia. During her study, she actively joined student organizations such as International Law Student Association and Photography club for her hobby. With her enthusiasm, she has been appointed to host the national conference "Business law in Society in 5.0", a master ceremony of several legal webinars, and keynote speaker for photography club webinar in 2020. She also has published 2 papers since 2020. In 2021, she persuaded her career through intern program at several law firms in Jakarta, Indonesia.

Siti Yuniarti is a lecturer in Business Law Program, Law Department, Faculty of Humanities, Bina Nusantara University, Indonesia. She is specialization in cyber law, especially on privacy and data protection. Since 2017, she has published 12 papers in the conference and been a contributor on four books. She is also involved in any research related to the smart contract, right to be forgotten, cryptocurrency, data protection, and e-commerce that the Indonesia government and authorities have held. With her experience, she has been invited as a speaker and host related to data protection and cyber law. She is also involved in various committees at lecturer associations on cyber and business competitions.