	Review Article

Artificial Intelligence: History and its Legal Framework in Indonesia

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Abstract

The purpose of this study is to addresses overview of AI and its use within Indonesian law. The discussion aims to be nuanced while also being understandable to those who do not have a technical background and to investigate AI's application relating to the formation of Indonesian laws. This study is a qualitative study. Indonesian regulations only apply to individuals and legal entities that are legally recognized legal subjects. AI is not intelligent in the sense of human cognition, nor intelligent thinking machines. AI is the ability to train computer how to do specific task. The role of the state in providing legal protection should be defined. This legal protection is required to provide legal certainty to the AI user community, both through AI-specific laws and regulations, as well as special institutions authorized to oversee the use of AI in Indonesia.

Keywords: Artificial Intelligence, History, Legal, Indonesia.

INTRODUCTION

Indonesian President Joko Widodo called on Indonesia to step up its Artificial Intelligence (AI) capabilities, so as to keep up with the rest of the world in the field. The world today is in a "war" to gain AI capabilities, the competition to control AI is comparable to the space race during the cold war, he warned. Furthermore Joko Widodo said that artificial intelligence will applied for public service for job simplification by cutting off numbers of civil servant related to administrative work that can be conducted by computers and artificial intelligence. He called for the need to annul the number of inefficient and irrelevant organizations and officials [1].

If we take a look back to the last few decades, the term Artificial Intelligence is a term that will make people frown and wonder "what is that look like?". First thing that will probably come to mind is the cyborg assassin sent back in time to kill Sarah Connor from the movie The Terminator starred by Arnold Schwarzenegger in 1984, or maybe a time machine in a form of modified DeLorean Car that can take us travelling through time like the one from the movie Back to The Future starred by Michael. J. Fox in 1985. Not to forget Vicki from the sitcom Small Wonder that aired on 1985 in United States, Vicki is a robot that made to look like a girl but only with superhuman strength that lives with her inventor Ted Lawson with his family.

Now back to the present, we probably didn't realize that AI is playing more significant and more diverse role in our lives than ever before. Self driving cars, predicting site preferences from saving browsing information and give relevant content, improving the video gaming experience. One of the main reasons for AI's tremendous growth is the abundance of data. While nearly 90 percent of the world's data has been created in the last decade. According to IDC's predictions, one hundred seventy-five zettabytes (175 trillion gigabytes) of new data will be generated around the world by 2025 [2].

On October 2018, an artwork made by an artificial intelligence program sold at a Christie's auction for \$432,500, nearly 45 times its high estimate.

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[1] Narasi Newsroom, *Beresikokah Rencana Jokowi Gantikan PNS dengan Robot AI?*, https://youtu.be/xlo_IP5we8Y, Last Accessed December 7, 2021

[2] Simplilearn, *Introduction to Artificial Intelligence A Beginner's Guide*, IndraStra Global, New York, 2020, p. 3

Citation: Wa Ode Zuliarti, Haris Yusuf, Asri Sarif (2022). Artificial Intelligence: History and its Legal Framework in Indonesia. *Sch Int J Law Crime Justice*, 5(6): 191-196.

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Portrait of Edward Bellamy, a painting created by a Paris-based art collective called Obvious, was generated by using an algorithm and a data set of 15,000 portraits painted between the 14th and 20th centuries. It sold during the October 23-25 *Prints and multiples* sale at Christie's, making it the first piece of AI art to go under the hammer at a major auction house [3].

A team of researchers from Microsoft and Kyoto University developed a poet AI good enough to fool online judges. It's the latest step towards artificial intelligence that can create believable, human passing language. In order to generate something as esoteric as a poem, the AI was fed thousands of images paired with human-written descriptions and poems. This taught the algorithm associations between images and text. It also learned the patterns of imagery, rhymes, and other language that might make up believable poem, as well as how certain colors or images relate to emotions and metaphors [4].

In a world first, a judge of the Federal Court of Australia has found that AI is capable of being an "inventor" for the purpose of the Australian patent regime. This is one more chapter in the global debate as to whether patent law and policy should adapt to recognize the changing innovation landscape. This decision is one of a series of test cases globally regarding the effect of AI "inventors" on the currents state of patent law in certain jurisdictions [5].

In Indonesia, many startup companies have started using AI to support their business activities. The technology products offered are AI-based, of course, this is due to the increasingly available and affordable supporting aspects needed to include AI in business activities which are now no longer only available to developed countries or large companies.

AI seems to be everywhere all around us and practically in every industry and an increasing number of organizations is joining the race to employ AI related skills. It has many positive effects and improves human activities. Every change that comes into our lives will impact us in a way, be that positively or negatively. Along with these advances the fact remains that there

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[3]Casey, Quackenbush, *A Painting Made by Artificial Intelligence Has Been Sold at Auction for $432,500,* https://time.com/5435683/artificial-intelligence-painting-christies/ , last accessed January 3, 2022

[4] Dan Robitzski, *This AI Wrote Poem That's Good Enough to Make You Think it's Human,* https://www.weforum.org/agenda/2018/04/artificial-intelligence-writes-bad-poems-just-like-an-angsty-teen, last accessed January 3, 2022

[5] Rebecca Currey, Jane Owen, *In The Courts: Australian Court finds AI Systems Can Be "Inventors",* https://www.wipo.int/wipo_magazine/en/2021/03/article_0006.html, last accessed January 7, 2022

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are legal concerns in determining is AI a legal entity? Whether Indonesia need to consider AI as an Inventor as Australia done earlier?

METHOD

This study is a qualitative study related to AI's application relating to the formation of laws and their relationship with other disciplines and other factors that influence law enforcement.

What Is AI?

Before we begin to talk about AI, let's throw a century back to the first industrial revolution just to make a good foundation of understanding to where it starts. The first industrial revolution spanned from about 1760 to around 1840. Triggered by the construction of railroads and the invention of the steam engine, it ushered in mechanical production. The second industrial revolution, which started in the late 19th century into the early 20th century, made mass production possible, fostered by the advent of electricity and the assembly line. The third industrial revolution began in the 1960s. It is usually called the computer or digital revolution because it was catalyzed by the development of semiconductors, mainframe computing (1960s), personal computing (1970s and 80s) and the internet (1990s) [6].

Artificial intelligence has been around for quite a while and often times associated with robot, in fact it has nothing to do with robot. What is really comes down to is the ability to train computer how to do specific task. In order to train this system you need a view thing such as a lot of digital information, computational power, and algorithm. Consider an algorithm to be a recipe in which you used a large amount of digital information and some computational power, and that's where it's going.

A good starting point for an introduction to the term AI is the 1956 Dartmouth summer research project on artificial intelligence, where the term was coined by McCarthy and collaborators (McCarthy on Bernd Carsten Stahl). In their proposal for this project McCarthy *et al.*, suggest that machines can be made to stimulate "every aspect of learning or any other feature of intelligence". As features of intelligence, McCarthy *et al.*, cite the use of language, the formation of abstractions and concepts, solving problems now reserved for humans and self-improvement [7].

When many people hear the term "AI" they imagine current AI systems as a thinking machines. A

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[6]Klaus Swab, *The Fourth Industrial Revolution,* World Economic Forum, Geneva, 2016, P. 11

[7] Bernd Carsten Stahl , Artificial Intelligence for a Better Future An Ecosystem Perspective on The Ethics of AI and Emerging Digital Technologies 1st ed. 2021, SpringerBriefs in Research and Innovation Governance.

common misperception along this line is that existing AI systems are producing their results by engaging in some sort of synthetic computer cognition that matches or surpasses human-level thinking. The reality is that today's AI systems are decidedly not intelligent thinking machines in any meaningful sense AI systems are often able to produce useful, intelligent results without intelligence [8].

Based on complexity and capability, there are basically three main types of AI:

1. Weak AI is both the most limited and the most common of the three types of AI. It's also known as narrow AI or artificial narrow intelligence (ANI). Weak AI refers to any AI tool that focuses on doing one task really well. That is, it has a narrow scope in terms of what it can do. The idea behind weak AI isn't to mimic or replicate human intelligence. Rather, it's to simulate human behavior. Narrow or weak AI is more like an intelligent specialist. It's highly intelligent at completing the specific tasks it's programmed to do [9]. In this category, machine simulates human behavior using complex algorithms but it cannot replicate human intelligence [10].

2. Strong AI, which is also known as general AI or artificial general intelligence (AGI). Strong AI refers to AI that exhibits human-level intelligence. So, it can understand, think, and act the same way a human might in any given situation. In theory, then, anything a human can do, a strong AI can do too. We don't yet have strong AI in the world, it exists only in theory.

3. Super AI is AI that surpasses human intelligence and ability. It's also known as artificial super intelligence (ASI). It's the best at everything — math, science, medicine, hobbies, you name it. Even the brightest human minds cannot come close to the abilities of super AI. Of the types of AI, super AI is the one most people mean when they talk about robots taking over the world or about AI overthrowing or enslaving humans [11].

AI can be implemented in the form of:

1. Machine learning, is the subset of AI that deals with the algorithms that learn from examples and previous experiences. It involves identifying patterns in data and utilizing them for future predictions.

2. Deep learning, is a sub-field of machine learning, and quite similar to it, except that deep learning uses numerous layers of algorithms called an artificial neural network. It mimics the brain's neural network, which also has a layered architecture. Deep learning involves using these layers to look for patterns in the data. Google's LeNet model for image recognition is a deep learning application that counts 22 layers of the network [12].

With AI currently being used in almost every industry, its applications today are wide-ranging. While it's not surprising that AI is actively being leveraged in business sectors such as healthcare, medicine, and robotics, there are also industries entirely unrelated for AI and computer science that are taking advantage of its innovations. According to McKinsey, AI is slated to create 600 billions of dollars of value in retail. It has the potential to drive a 50% more incremental value in banking than other analytics techniques. The potential revenue jump for the transport and logistic sector is 89% [13]. In 2021, there are 101 AI based machine learning startup companies in Indonesia. The startup companies are taking a variety of approaches to innovating the machine learning industry [14].

Research showed that things informed by algorithms and AI gain new skill they have not had before. With this, they acquire a new form of agency, new ways to act and to make decisions. This new agency is particularly effective regarding the following skills:

1. The skill to read and speak, new developments in the field of AI have led advances in speech recognition and natural language processing providing things with the ability to read, listen, and process what has been read or heard in order to answer. These technologies have in recent years allowed for the development of intelligence personal agents with conversational interfaces such as Alexa, Siri or Google Home to enter the mass market but also fostered applications processing medical information such as Babylon. What Potential earned from this skill is voice dialogue is an intuitive alternative to the graphic user interface; language processing allows new

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[8] Harry Surden, Machine Learning and Law, 89 WASH. L. REV. 87 (2014) P. 89, https://digitalcommons.law.uw.edu/wlr/vol89/iss1/5 last accessed December 31, 2021

[9] ThinkAutomation, *Types of AI: distinguishing between weak, strong, and super AI,* https://www.thinkautomation.com/bots-and-ai/types-of-ai-distinguishing-between-weak-strong-and-super-ai/, last accessed January 05, 2022

[10] Denys Holovatyi, *3 Types of Artificial Intelligence,* https://www.linkedin.com/pulse/3-types-artificial-intelligence-denys-holovatyi, last accessed January 05, 2022

[11] ThinkAutomation, opcit.

[12] Simplilearn, *Op.Cit* p. 6

[13] *ibid*

[14] Artificial Intelligence Startups in Indonesia, *https: tracxn.com/explore/Artificial-Intelligence-Startups-in-Indonesia,* Last Accessed January 10, 2022

forms of dialogues. And the challenge is concerns about privacy/ubiquitous, to be able to listen the conversational agent needs to be 'always on'

2. The skill to see, advances in image recognition driven by neural networks are currently being beta-tested in the UK in a vast range of uses from self-driving vehicles to medical applications. For the Moorfields Eye Hospital London. AI analyses highly complex eye scans in partnership with DeepMind Health. And on some of UK's streets cars already park themselves or take over driving either in part or fully. What potential earned from this skill is specific to the areas where this is applied. In transport will likely bring positive outcomes for citizens and/or the environment. The detection of illnesses can assist and ease the delivery of healthcare for the NHS. And the challenge is there are cases that show that visual identifications by algorithms can easily be fooled. The reliability of image recognition has not been sufficiently tested.

3. The skill to track and process, digital chips have become smaller and affordable and a wide range of sensors can now be applied to all things. Most smartphones currently hold a receptive microphone, an ambient light sensor to adjust screen light, a barometer to sense elevation and air pressure, an accelerometer to measure velocity, a gyrometer to measure to sense gravity and which way is down and a fingerprint sensor. Inserted into objects, these sensors can be used to assist or replace human activity by being pre-programmed or by making their own decisions (AI). Information that was before researched and presented by lawyers, journalists, doctors can now also in parts be searched and processed by automated data/document review. What potential earned from these skills are comfort and convenience in everyday life. Providing medical and care assistance (assistive technology). Higher effectivity through faster interaction. And the challenge is concerns for privacy/ubiquitous surveillance the internet of things is tracking not just the movements of citizens but also their habits. Trust and consent – users should have control over their data and the right to question decisions based on their data. Biased decisions – AI systems often have the tendency to amplify biases they find in the data they are trained with and they need large, expensive databases to be trained [15].

AI Legal Framework in Indonesia

Law is part of the structure of society, whether modern or primitive. Law both shapes and is shaped by society. Law impacts on every human activity undertaken within society. Imagine going to work this morning. Decide whether you wish to drive or take the train. If you drive, the road rules will help you get to your office safely. If you take the train, the contract you make by buying a ticket will oblige the rail company to take you there. When you get to your office your employment contract (or some statute) will determine what you do and how much you get paid. Imagine just about any activity and you will find law in attendance – sometimes helping, sometimes hindering. For the sociologist, anthropologist, economist and just about any social scientist, it pays richly to consider the nature of law and the legal system [16].

Technology has profoundly altered our modes of life**,** as the technology developed it also change the human behavior to become highly dependent on technology. One of the examples that happened these days is the increasing amount of businesses service based on online application, These are fascinating but it also have many ethical, legal and social implication that law is not prepared for this, no specific Indonesian legal act comprehensive with this situation.

There are two types of law related to national law revisions: those that tend to be changeable and those that tend to be conservative. Family law or personal property law is conservative and rarely changes. On the other hand, many areas of commercial law, and national administration are laws that change according to the needs and development of society [17].

Roscoe Pound gives the theory of Social Engineering in which he focus on the law on discipline with his theory "Law as a tool of social engineering" that the law can be used to either reform or control society. Roscoe Pound then created a classification of the interests that must be protected by the law itself, including the public interest, social interest, and personal interest, in order to fulfill its purpose. The state's interest as a legal body and the guardian of the public interest are included in the public interest. The community's interests include peace and order, the safeguarding of social institutions, the prevention of moral degeneration, the prevention of human rights breaches, and social welfare. Individual, family, and property rights are examples of personal interests.

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[15] Mercedes Bunz , Laima Janciute, *Artificial Intelligence And The Internet of Things UK Policy Opportunities and Challenges,* University of Westminster Press, London, 2018. P. 12-15

[16] Suri Ratnapala, *Jurisprudence,* Cambridge University Press, United Kingdom, 2009, p. 2 www.cambridge.org/9780521614832

[17] Munir Fuady, *Sosiologi Hukum Kontemporer "Interaksi Hukum, Kekuasaan, dan Masyarakat*, (Jakarta: Kencana, 2011), p. 61.

Development, of course, has ramifications for a variety of social issues, including legal institutions. This means that any adjustments made along the way will necessitate legal changes. These changes are positive in the sense that they will help to develop a new legal system that is in line with societal values. In the current era of globalization, society's engineering cannot be limited. However, it must be directed to where the change is to be achieved. If the occurred changes are left to happen naturally, there will be numerous possible irregularities and contradictions with the fundamental principles that are supposed to be maintained.

According to Mochtar Kusumaatmadja, referring to Northrop's cultural theory thought from Lasswell - McDougal, the law used as a means of reform can be in the form of law, jurisprudence, or a combination of both. Legislation is the most prominent in Indonesia, with jurisprudence playing a minor role [18]. In this case, it is clear that the theory emphasizes the importance of society changed as a material source in the process of forming legislation and jurisprudence.

When compared to Australia, which has given legal recognition that AI can be an inventor, as well as other fields that can relate to AI, the use of AI that is so widespread in Indonesia so far does not have its own legal rules, say the most likely is in the field of Intellectual Property Rights.

According to Article 1 number 3 of Law Number 13 of 2016 Concerning Patents (hereinafter referred to as the Patent Law), *"inventor is one or several people who jointly implement ideas that are poured into activities that produce inventions"* and according to Article 1 number 13 of the Patent Law *"person is an individual or a legal entity"*. According to Article 1 number 2 of Law Number 28 of 2014 concerning Copyright, *"a creator is one or more people who individually or collectively produce a unique and personal creation"*.

According to the definition above, legal subjects in the field of Patents and Copyrights are individuals or legal entities, and the two fields are the most likely to come into contact with AI. As a result, it is clear that AI is an object, not an inventor. If the Ai creates a work that falls within the scope of Intellectual Property, the work becomes a new object for the inventor to register according to the classification.

Every AI product or action has an impact, whether positive or negative. If the actions taken by AI are not in accordance with what was ordered, AI can have a negative impact and even harm its users. Some examples of violations and data leakage from marketplace users. Data leakage occurs when the data used in training process contains information about what the model is trying to predict. Data leakage is a serious and widespread problem in data mining and machine learning which needs to be handled well to obtain a robust and generalized predictive model [19].

CONCLUSION

In Indonesia, current regulations only apply to individuals and legal entities that are legally recognized legal subjects. With the assumption that AI does not qualify as a legal subject, who is liable for the negative consequences experienced by users as a result of AI program errors? The role of the state in providing legal protection to its citizens should be defined here. This legal protection is required to provide legal certainty to the AI user community, both through AI-specific laws and regulations, as well as special institutions authorized to oversee the use of AI in Indonesia.

According to Ahmad Ramli's on Transformative Legal Theory, the law's role is not only to maintain justice, legal certainty, and order, but it can also serve as a transformation infrastructure in Indonesia in the face of the 5.0 industrial revolution, allowing the country to adapt to massive digital transformation that move quickly [20]. As we explore our way on how new high-tech tools appear familiar or strange, we continue to learn more about what it means to be human, as writers and readers, creators and consumers. Understanding the strengths and limitations of current AI technology is critical to understanding AI in the legal context.

REFERENCES

- Ahmad, R. *Artificial Intelligence and Intellectual Property,* presented at the Artificial Intelligence Webinar and its Implications for Intellectual Property Rights Regulation in Indonesia on Tuesday 14 October 2021, Held by Kanal Pengetahuan FH UGM.
- Artificial Intelligence Startups in Indonesia, *https: tracxn.com/explore/Artificial-Intelligence-Startups-in-Indonesia.*

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[18] Putra, M. (2014). KONTRIBUSI ALIRAN SOCIOLOGICAL JURISPRUDENCE TERHADAP PEMBANGUNAN SISTEM HUKUM INDONESIA. *Jurnal Likhitaprajna*, *16*(2), 45-59. Retrieved from https://likhitapradnya. Wisnuwardhana.ac.id/index.php/ likhitapradnya/article/view/38, P. 52, Last Accessed May 15, 2022.

[19] Soner Yildirim, *Data Leakage in Machine Learning,* https://towardsdatascience.com /data-leakage-in-machine-learning-6161c167e8ba, Last Accessed 18 May 2022

[20] Ahmad Ramli, *Artificial Intelligence and Intellectual Property,* presented at the Artificial Intelligence Webinar and its Implications for Intellectual Property Rights Regulation in Indonesia on Tuesday 14 October 2021., Hel by Kanal Pengetahuan FH UGM.

- Bernd, C. S. (2021). Artificial Intelligence for a Better Future An Ecosystem Perspective on The Ethics of AI and Emerging Digital Technologies 1ˢᵗ ed. 2021, Springer Briefs in Research and Innovation Governance.
- Casey, Q. *A Painting Made by Artificial Intelligence Has Been Sold at Auction for $432,500,* https://time.com/5435683/artificial-intelligence-painting-christies/
- Dan, R. *This AI Wrote Poem That's Good Enough to Make You Think it's Human,* https://www.weforum.org/agenda/2018/04/artificial-intelligence-writes-bad-poems-just-like-an-angsty-teen.
- Denys Holovatyi, *3 Types of Artificial Intelligence,* https://www.linkedin.com/pulse/3-types-artificial-intelligence-denys-holovatyi.
- Harry, S. (2014). Machine Learning and Law, 89 WASH. L. REV. 87, https://digitalcommons.law.uw.edu/wlr/vol89/iss1/5
- Klaus, S. (2016). *The Fourth Industrial Revolution,* World Economic Forum, Geneva.
- Putra, M. (2014). Kontribusi Aliran Sociological Jurisprudence Terhadap Pembangunan Sistem Hukum Indonesia. *Jurnal Likhitaprajna*, *16*(2), 45-59. Retrieved from https://likhitapradnya.wisnuwardhana.ac.id/index.php/ likhitapradnya/article/view/38
- Mercedes, B., & Laima J. (2018). *Artificial Intelligence and the Internet of Things UK Policy Opportunities and Challenges,* University of Westminster Press, London.
- Munir, F. (2011). *Sosiologi Hukum Kontemporer "Interaksi Hukum, Kekuasaan, dan Masyarakat*, Jakarta: Kencana.
- Narasi Newsroom, *Beresikokah Rencana Jokowi Gantikan PNS dengan Robot AI?,* https://youtu.be/xlo_IP5we8Y
- Rebecca Currey, Jane Owen, *In The Courts: Australian Court finds AI Systems Can Be "Inventors",* https://www.wipo.int/wipo_magazine/en/2021/03/article_0006.html.
- Simplilearn. (2020). *Introduction to Artificial Intelligence A Beginner's Guide,* IndraStra Global, New York.
- Soner Yildirim, *Data Leakage in Machine Learning,* https://towardsdatascience.com/data-leakage-in-machine-learning-6161c167e8ba.
- Suri Ratnapala, *Jurisprudence,* Cambridge University Press, United Kingdom, 2009, www.cambridge.org/9780521614832
- ThinkAutomation, *Types of AI: distinguishing between weak, strong, and super AI,* https://www.thinkautomation.com/bots-and-ai/types-of-ai-distinguishing-between-weak-strong-and-super-ai/.