

# Law as Artificial Intelligence Product

*by* Agus Raharjo

---

**Submission date:** 03-Apr-2023 08:30AM (UTC+0700)

**Submission ID:** 2053965913

**File name:** 125920841.pdf (2.06M)

**Word count:** 4344

**Character count:** 23583

# Law as Artificial Intelligence Product

19  
Agus Raharjo  
Universitas Jenderal Soedirman, Purwokerto – Indonesia  
agusraharjo007@gmail.com

**Abstract-** Artificial intelligence, known as a science product, was also owned by law. If the embodiment of AI in science can be in the form of robots, computer systems to trans-human entities, then in law, the product is in the form of law regulations and institutions. AI has been utilized in various fields of life, whereas in law, AI is only limited to legal information and documentation services. Utilization of AI (science products) in law cannot be maximized yet because to solve human problems cannot be fully handed over to machines. However, the law is often asked for help to solve problems that arise as a result of damage to AI machines both caused by criminal acts and internal damage to the AI system. The relationship between AI and the law needs to be improved so that in the future, the AI system can be utilized to solve or resolve legal problems that arise in society.

**Keywords-** Artificial Intelligence, Industrial Revolution, Cybercrime, Disruption, Prevention of Crime

## I. INTRODUCTION

In the global world people hold the world on their handful. There are two reasons proposed as supporting the title above. First, basically law is technology. This premise is based on author's previous article which proposed two propositions, namely (a) the use of production term legal mode by Trubek in his [5] search in the context of global economic restructuring. The word 'production' is [5] word that is unique or inherent in technology; and (b) the law works through an organization so that it can be known who plays what role. Here are known the [5] priests and practitioners who occupy different positions on the legal mode of production pathway, but they are interconnected and working together towards the perfection of "legal machinery". Another fact is the use of the term which later became the doctrine of "law as a tool of social engineering", which was first introduced by Roscoe Pound [1],[2].

Secondly, as a technology, developing the law is also inseparable from the rules of technological development in science. In science, the results of thought in the form of concepts, propositions and theories are then manifested in a tangible object which is as called technology. In science, to realize the results of thought in the form of objects is only need one stage, which can then be used to help humans in meeting their needs. However, in (scientific) law, to reach a stage or become a thing, there is one more stage that must be passed. The results of thought in the (scientific) law - in the form of concepts, propositions or theories - will manifest into articles in the legislation which are mostly linguistical games. This form is not

operationally yet, because it still requires one more stage, namely organizing in the operation of the law carried out by institutions or law enforcement agencies. These institutions are referred to as legal "machines" (technology). However, both are subject to the rules of technological development, namely the need for feedback from users who will be used towards technological perfection.

However, the achievement of science seems to be beyond the law so that the gap is widening. If science is able to create intelligent entities that are able to solve human problems in a flash [3], then the law hurriedly tries to match that achievement by utilizing the results of science (technology) to be applied in the science and practice of law. In science fiction films it has been shown how scientific works (for example in "RoboCop" film) which have been embedded with legal algorithms, are able to enforce laws more efficiently than humans. From this it can be seen that although science and law are products of human intelligence, but to materialize into a product that can be utilized by humans or society to take different paths.

The gap between science and law is seen today through technology products in science that are able to create trans-human entities, cyborgs - an acronym for cybernetic-organism - an organic and mechanical entity in a single entity. Entities that contain artificial intelligence are manifested in various forms that can help humans in various fields of life. The law also did not escape using this artificial intelligence - although it was rather late. The real law is the product of artificial human intelligence requires [18] tificial intelligence products from science to realize the purpose of law. This paper will discuss the relationship of law with the results of artificial intelligence from science, its uses, opportunities and challenges for the future of law.

## II. FINDINGS AND DISCUSSION

### 1. Artificial Intelligence as a Part of Industrial Revolution 4.0

The development of artificial intelligence always accompanied [13] the industrial revolution and reached its peak during the industrial revolution 4.0. Development of the Industrial Revolution 4.0 - conceptually introduced by Prof. Schwab (2017) in Germany - is a continuation of the previous Industrial Revolution when viewed from a historical perspective, and has been able to significantly change human life and civilization. Industrial Revolution

1.0. marked by production mechanization that supports human effectiveness and efficiency, the Industrial Revolution 2.0 is characterized by mass production and quality standardization, the Industrial Revolution 3.0 is characterized by mass adjustments and manufacturing and automation based robot flexibility, and the Industrial Revolution 4.0 is characterized by physical cyber and manufacturing collaboration including cyber-physical systems, Internet of Things (IoT), cloud computing, cognitive computing, artificial intelligence robotic, nano technology, biotechnology, quantum computer technology, blockchain (bitcon), internet-based technology, and three dimension printing [3][4][5].

15 The Industrial Revolution 4.0 was marked by an increase in digitalization manufacture which was driven by four factors, namely an increase in data volume, computing power, and connectivity; the emergence of analysis, ability, and business intelligence; new forms of interaction between humans and machines; and improvement of digital transfer instructions to the physical world, such as robotics and 3D printing [6]. Lifter and Tschienner [7] add to the basic principles of Industry 4.0, namely the integration of machines, workflows and systems, by applying intelligent networks along the chain and production process to control each other independently [5].

Herman et.al added 4 (four) 4 industry 4.0 principal designs, namely:

- (1) Interconnection, the ability of machines, devices, sensors, and people to connect and communicate with each other through the Internet of Things (IoT) or the Internet of People (IoP). This principle requires collaboration, security and standards;
- (2) Information transparency is the ability of information systems to create virtual copies of the physical world by enriching digital models with sensor data including data analysis and information providers;
- (3) Technical assistance which includes the ability of the assistance system to support people by consciously combining and evaluating information to make the right decisions and solve urgent problems in a short time; the ability of the system to support humans by carrying out tasks that are not pleasant, too loose, or unsafe; and includes visual and physical assistance;
- (4) Decentralized decision making is the ability of virtual physical systems to make their own decisions and carry out tasks as effectively as possible [3],[5].

17 The digital revolution and the era of technological disruption are other terms of industry 4.0. It called the digital revolution because of the proliferation of computers and the automation of records in all fields. Industry 4.0 is said to be the era of technological disruption because automation and connectivity in a field will make the movement of the industrial world and job

9 competition become non-linear. One of the unique characteristics of Industry 4.0 is the application of artificial intelligence [8]. One form of application is the use of robots to replace human labor so that they are cheaper, more effective and efficient [5].

The digital revolution is not only bring someone to a different level of experience in running their life, but the impact that seems quite shocking especially on the business world. The conventional business world is filled with bureaucracy and restrictions, of course shaken by the existence of the internet which is able to penetrate these conventional boundaries. Old and established players (status quo) are made helpless and out of business if they cannot keep up with the changes and developments of the digital revolution.

Digital disruption is the term used to describe the subsequent changes due to the digital revolution. When digital technology is able to present application service products that are capable of shifting, replacing and rooting out existing services, then that's where disruption emerges. Not all parties are ready for these changes, so the reactions caused by this phenomenon also vary, from reactive and even destructive to those trying to adapt to change.

The main element of the 4.0 Industrial Revolution or digital disruption was the development of massive information technology which was then applied in various fields. However, all changes that occur and related to technology - including digital disruption - have been predicted and in accordance with the promises of technology. For the worshipers of technology, technology is a magical thing that is able to bring humans to their desires, technology is like a talisman.

The world around us is filled with technology, and messages conveyed through electronic and print media contain technological promises. Technology unceasingly offers a way of solving lightning. Technology vows to make our lives better, make us smarter, improve our performance, and make us happy. Technology promises to be faster, cheaper and easier than anything that has ever existed before. Technology swears will provide security, stability, privacy and safeguard us while at the same time abundant peace of mind and keep us free from anxiety. Technology promises to connect us to the outside world, but still keeps us close to friends and family that we love. Technology records and reminds us of precious moments in our lives. Technology promises to be the foundation of a new world economy and a strong counterweight. Technology promises to make us rich. All the technological promises sound like reed years. We are made to believe that all solutions can be obtained, simply by buying it [9].

The promise of technology will increasingly be realized with the development of several technology products that cause digital disruption, such as intelligent agents, augmented and virtual reality, internet of things,

cognitive technology and hybrid wireless technology. Equality in the economy for example is increasingly evident, each person can now become an entrepreneur not dependent on the amount of capital he has, does not have to have factories, offices or facilities and other physical infrastructure. If this development is put to good use, it will become a factor driving national economic growth. Now, the influence of the Industrial Revolution 4.0. is seems to be more talked about in the business world, especially in the transportation, service, retail, and financial businesses moving towards fully digital and automation. However, the influence of digital technology on economic, political, legal, socio-cultural and other fields of life cannot be ignored.

## 2. Artificial Intelligence and Law: Making Law More Technological

AI is the study of cognitive processes using the conceptual frameworks and tools of computer science." Marvin Minsky said it well: AI is "the science of making machines do things that would require intelligence if done by man. Thus, all manner of intelligent behavior is in the realm of AI, including playing chess," solving calculus problems," making mathematical discoveries," understanding short stories," learning new concepts," interpreting visual scenes," diagnosing diseases," and reasoning by analogy.

The relationship between AI and the law is relatively young. When referring to the first conference on the application of AI to the law held in Swansea, Wales, 17-27 September 1979, the relationship had only lasted for 40 years. The second conference was only held ten years later in May 1989 in Bologna, Italy. This relationship is ups and downs which makes the work that discusses this problem is not much, especially in Indonesia, this problem is not a sexy issue. Nevertheless, it is a challenge to align law with science through the use of AI.

According to McCarty, the relationship between AI and law has two different motivations, namely practical and theoretical. On the practical side, he tries to build a legal legal information system, a system that can help both lawyers and non-lawyers in their interactions with both legal and non-legal rules. On the theoretical side, it tries to get a better understanding of the process of legal reasoning and legal argumentation, using model and computational techniques. According to him, there are currently many "rule-based expert systems" in law. However, the work of Richard Susskind is particularly instructive in this regard. Susskind [13] has argued that a restricted form of backward-chaining propositional inference is sufficient for many practical legal tasks, citing a consensus among diverse jurisprudential theorists, and he has backed up this claim in his work with Philip Capper on an expert system for the English law of latent damages [14] [10].

The study of the relationship between AI and the law recorded in the document was carried out by Buchanan and Headrick in 1970 that discussed the possibility of modeling research and legal reasoning, especially for providing advice, legal analysis and document construction, and although they imagined using a rule-based approach aimed at objectives, they show the importance of analogical reasons. Subsequent research, both conducted by L. Thorne McCarty [10] to Feteris and Prakken [11] actually focused on how information or legal documents were entered into the microprocessor which was then processed by the machine to obtain results or legal decisions. So they are busy to input legal data into the system and then let the system work.

As in the Deep Blue computer that is able to record millions of chess steps, and react to the opponent's chess steps, so too the "legal machine" that has been filled with thousands of laws and regulations, will give a more accurate reaction to the problems raised. That's how the law machine works that has been modified in such a way. However, the accuracy of the answers or problem solving provided by this machine depends on the proper programming and input system. Reaction or feedback action systems as in cybernetics theory apply to this.

It is worth considering in the scientific development of AI and this law is that AI systems work by using logic, whereas as Holmes introduces in his work - Law in Science and Science in Law - that law is not logic, but experience. AI has its own internal logic and humans also have external logic derived from experience. If human external logic cannot be input into an AI system - computer for example - then this external logic will not be part of the decision taken by the legal machine. The law is uprooted from its social base, whereas the interaction between the internal logic of the law and the external logic (experience) is important in determining a decision on a legal case.

Laws are the result of man-made intelligence just like computer programs. The main thing that makes the law develop is the feedback from the environment. This is what in computing theory is called cybernetics, which when applied in the field of law will be like this: legal logic generates first approximations, which have a better than random chance of being tolerable to the community because they are based on analogies to solutions accepted in the past; external experience then operates to modify those results which the community cannot accept, transforming the logic for the future. In much the same way, an artificial intelligence program learns about the environment, uses that information to guide searches, and then uses the results of those searches to improve its internal model of the environment. Had Holmes cared less for the felicity of a phrase, he could have written: "The life of the law is the cybernetic process by which experience modifies the available logic set". [12]



AI is widely used in the fields of industry, manufacturing and business. AI in these fields is usually connected to a large network called Internet. When entering the global network, there is no guarantee of security. Computer systems - where AI is embedded - are vulnerable to attacks from outside parties that cause crashes or damage, in addition to internal damage or errors that often arise. Of course this damage or error brings harm to certain parties who utilize the computer system. Thus, damage to a computer system is not only a technical problem, but also extends to a legal problem. Then how to prevent and deal with it?

Associated with aspects of damage caused from outside on a computer system commonly called cybercrime, the prevention of that can be done in various ways. There are two models in the investigation of criminal cases, namely crime control model and due process model. Both have significant disadvantages in the cybercrime prevention and control process. Crime control models or reactive models as they are known in criminal justice and committed by police are not effective enough to prevent cybercrime. Reactive strategies for cybercrime cannot be properly implemented because once the crime has been committed; the offender can remove the trail easily. Moreover, these crimes occur in an electronic environment, so that the physical evidence is easily lost from memory, or evidence can be easily destroyed. The police may be able to determine the location where the offender accesses the internet after tracing the activity through log files, but when examined it may be that the offender has gone or instead uses anonymity where it is possible in cyberspace. In other words, the use of formal activities (affirmative model) is not suitable to handle cybercrime [15].

It is said by Brenner that for the current law enforcement model - which makes the process of reacting to crimes (or cybercrimes) the exclusive province of a cadre of government-sponsored, professional law enforcement agents - is not, and will never be, adequate to keep cybercrime and related evils such as cyber terrorism within acceptable bounds. Indeed, the problems we are using are migratory from the "boxes" we currently use and embed itself into our environments and, perhaps, into ourselves [16].

Similarly, due process model, not suitable for complete cybercrime completely. The typology of due process model with the negative model always emphasizes the limitation on formal power and modification of the use of power, where the dominant power in this model is the judicial power and always refers to the constitution. In Indonesian criminal justice, the judicial power is in court, and it is said to be the final wall of justice, whereas cybercrime cannot be quickly prevented through courts of tortuous proceedings. This model is suitable for legal certainty, but not suitable for preventing crime, let alone types of crime that have high speed and mobility rates such as cybercrime [15].

Based on the existing weaknesses of the existing crime prevention model, new steps are needed, as it prevents cybercrime from more than just legal or technical matters, not just the police duties but also the tasks of stakeholders utilizing the Internet (Internet Service Provider), parents, community and government. This alternative prevention model is based on the internet user itself (prevention based by user). This means the foothold to prevent cybercrime is no longer the government, police or justice system but it will be the internet user. In a narrow sense, internet users should be equipped with knowledge about good ways to use internet (guidance principle using internet) or understand cyber ethic or netiquette. This step is referred to as prevention by defense by the users themselves that tend to arise. In addition, the user must also complete the Internet infrastructure with a security system that should be kept updated by keeping in mind that technological development happens very fast [15]. This model relies more on the user's sense of responsibility for themselves and more broadly for the people of internet security. This model places criminal law (along with its apparatus) on the correct proportion, for example, as an *ultimum remedium*, by promoting public participation (Internet users) in crime prevention.

Another model introduced by Brenner is prevention law enforcement. This model gives power to the police or law enforcers to identify and take down people who may be able to do crime before they are able to do it. In other words, law enforcers take action before the proof is complete by doing intervention before the crime really happens. This makes it possible to law enforcer to intervene and take down individuals based on prediction over their potential in doing crime. Nevertheless, this model tends to count on one's indicator which appear on the surface, too general and tend to neglect guarantee legal process [17]. If this is implemented, it will be dangerous for law enforcer because they can be accused for misusing power and there will be many law enforcers who receive judgment [15].

Even though the burden for preventing crime through the model above has shifted to internet user, this does not mean legislation and judicial function (criminal justice system) is unimportant. These functions are still important since the pace of technology information development, especially internet, needs to be anticipated through regulations in legislation. McQuede III wrote that Internet carries with it significant new risks of criminal victimization, and thus present some pressing challenges for legislators and criminal justice agencies. However, attempts to police the Internet for the purposes of crime control also raise serious dilemmas and dangers. Central here is the tension between surveillance and monitoring of online activities, on the one hand, and the need to protect users' privacy and confidentiality, on the other. Law enforcement agents need to be able to identify offenders and collect evidence of online crimes. Offenders, however, are

able to exploit anonymity and disguise to hide themselves and their activities from prying eyes [18].

Prevention based by user model requires user to know, understand and update to the development of information technology, especially technology for internet safety. However, since there is limitation of user knowledge, several basic security systems should have been built up in the sold computer or laptop. In other words, this model emphasizes the importance of computer producer (business entity) to be responsible by participating in cybercrime prevention, even though this is not hierarchy like organization mentioned above. The users still have their own authority in deciding which security system installed in the computer. Prevention based on the user is suitable to be applied through the damage caused by the system itself. A manager of computer system security must be able to detect damage of the system and repair it. Without this capability, managers are no more than operators or ordinary users.

### III. CONCLUSION

AI has been implemented in various fields. In the field of law, the implementation of AI is more on the availability of legal information and documentation services. However, if there is damage to AI operational equipment caused by outsiders or damage to the system, the law is often invited to resolve it. The criminal justice system - which is actually also an AI - has a distinctive settlement pattern, so do computer system managers have a way of preventing system damage. Because there is mutual need between AI and law, understanding of the two fields must continue to be improved so that its utilization brings progress to science and humanity.

### REFERENCES

- [1] A. Raharjo, *Hukum dan Teknologi, Suatu Tinjauan Filosofis dan Kritik Terhadap Positivisme Hukum*. Semarang: BP Undip, Semarang, 2007;
- [2] A. Raharjo, Y. Saefudin, and R. Fidiyani, The influence of technology determinism in forming criminal act of legislation. *E3S Web of Conferences* 73, 12011 (2018);
- [3] Herman, M., T. Pentek & B. Otto. Design Principle for Industrie 4.0 Scenarios. *Paper*. Presented at the 49<sup>th</sup> Hawaiian International Conference on System Science. 2016;
- [4] D. Irianto, Industry 4.0: The Challenges of Tomorrow. *Paper* on Seminar Nasional Teknik Industri, Batu-Malang. 2017;
- [5] M. Yahya, *Era Industri 4.0: Tantangan dan Peluang Perkembangan Pendidikan Kejuruan Indonesia*. Pidato Pengukuhan Penerimaan Jabatan Profesor Tap dalam Bidang Ilmu Pendidikan Kejuruan, Fak. Teknik Universitas Negeri Makasar, Makasar, 14 Maret 2018.
- [6] Lee, J., E. Lapira, B. Bagheri, H. Kau. 2013. Recent Advances and Trends in Predictive Manufacturing Systems in Big Data Environment. *Manuf. Lett.* 1 (1), 2013, pp. 38-41;
- [7] M. Lifter, & A. Tschinger. 2013. *The Internet of Things and the Future of Manufacturing*. McKinsey & Company;
- [8] R.R. Tjandrawinata, Industri 4.0: Revolusi Industri abad ini dan pengaruhnya pada bidang kesehatan dan bioteknologi. *Jurnal Medicinus*, Vol. 29 No. 1, April 2016;
- [9] J. Naisbitt, N. Naisbitt and D. Philips, *High Tech, High Touch, Pencarian Maka di Tengah Perkembangan Pesat Teknologi*, Bandung: Mizan, 2001.;
- [10] McCarty, L. Thorne, Artificial Intelligence and Law: How to Get There from Here, *Ratio Juris*, Vol. 3 No. 2 July 1990, pp. 189-200;
- [11] Rissland, Edwina L., Kevin D. Ashley, R.P. Lau, AI and Law: A fruitful synergy, *Artificial Intelligence* 150 (2003), pp. 1-15;
- [12] E. Elliott, Donald, Holmes and Evolution: Legal Process as Artificial Intelligence, *Journal of Legal Studies*, Vol. XIII (January 1984), pp. 113-146;
- [13] R.E. Susskind, *Expert Systems in Law: A Jurisprudential Inquiry*. Oxford: Oxford University Press, 1987.
- [14] R.R. Susskind, and P. Capper. 1988. *Latent Damage Law: The Expert System*. London: Buitenvorths;
- [15] Raharjo, Agus. *Pencegahan Cybercrime Melalui Pengembangan Prinsip Pertanggungjawaban Pidana Bagi Pengguna Internet*, Paper on Seminar Nasional Hukum Pidana, Purwokerto, June 2013;
- [16] S.W. Brenner. "Private-Public Sector Cooperation in Combating Cybercrime: In Search of a Model", *Journal of International Commercial Law and Technology*, Vol. 2, Issue 2, 2007. pp. 58-67;
- [17] S.W. Brenner, "Distributed Security: Moving Away from Reactive Law Enforcement", *International Journal of Communication Law and Policy*, Special Issues Cybercrime Spring, 2009. pp. 1-43;
- [18] McQuede III, Samuel C. (ed). (2009). *Encyclopedia of Cybercrime*. Westport CT: Greenwood Press

# Law as Artificial Intelligence Product

---

## ORIGINALITY REPORT

---

**20%**  
SIMILARITY INDEX

%  
INTERNET SOURCES

**20%**  
PUBLICATIONS

%  
STUDENT PAPERS

---

## PRIMARY SOURCES

---

- |          |  |           |
|----------|--|-----------|
| <b>1</b> | L. THORNE MCCARTY. "Artificial Intelligence and Law: How to Get There from Here", Ratio Juris, 7/1990<br>Publication   | <b>3%</b> |
| <b>2</b> | Elliott, E. Donald. "Holmes and Evolution: Legal Process as Artificial Intelligence", The Journal of Legal Studies, 1984.<br>Publication                                   | <b>3%</b> |
| <b>3</b> | Amirudin Amirudin, Sugiharto Sugiharto. "The Implementation of Curriculum Development in The Era of The Industrial Revolution 4.0", Jurnal Basicedu, 2022<br>Publication   | <b>2%</b> |
| <b>4</b> | Tae Kyung Sung. "Industry 4.0: A Korea perspective", Technological Forecasting and Social Change, 2018<br>Publication  | <b>2%</b> |
| <b>5</b> | Agus Raharjo, Yusuf Saefudin, Rini Fidiyani. "The influence of technology determinism in forming criminal act of legislation", E3S Web of Conferences, 2018<br>Publication | <b>2%</b> |

6

Esmi Warassih Warassih Pudjirahayu, Faisal Faisal, Ndaru Satrio. "Wewenang Komisi Pemberantasan Korupsi dalam Penghentian Penyidikan dan Penuntutan Perspektif Independensi", University Of Bengkulu Law Journal, 2020

Publication

2%

7

Wallace R. Baker. "Synergy for Sustainability", Alliance for Global Sustainability Bookseries, 2007

Publication

1%

8

Riska Destiana, Kismartini Kismartini. "Halal Tourism Marketing in the Disruption Era: A Case Study of Penyengat Island in Riau Islands Province", Society, 2020

Publication

1%

9

Basuki Basuki, Yoto, Agus Suyetno, Bella Cornelia Tjiptady. "Management Model of Manufacturing Workshop/Laboratory of Vocational Education in the Industry 4.0", 2020 4th International Conference on Vocational Education and Training (ICOVET), 2020

Publication

1%

10

"Encyclopedia of Criminology and Criminal Justice", Springer Science and Business Media LLC, 2014

Publication

1%



11

S.M. Swain, J. Baselga, D. Miles, Y.-H. Im, C. Quah, L.F. Lee, J. Cortés. "Incidence of central nervous system metastases in patients with HER2-positive metastatic breast cancer treated with pertuzumab, trastuzumab, and docetaxel: results from the randomized phase III study CLEOPATRA", Annals of Oncology, 2014

Publication

<1 %

12

Jinan Fiaidhi, Sabah Mohammed. "Digital Health in the Era of Extreme Automation", IT Professional, 2018

Publication

<1 %

13

Yudha Dwi Nugraha. "THE ROLE OF HIGHER EDUCATION POLICY AND THE DEVELOPMENT OF MANAGEMENT SCIENCE IN THE INDUSTRIAL REVOLUTION 4.0: A PERSPECTIVE FROM INDONESIA", Academy of Education Journal, 2021

Publication

<1 %

14

Marc Helmold, Brian Terry. "Operations and Supply Management 4.0", Springer Science and Business Media LLC, 2021

Publication

<1 %

15

Nova Maryanti, Rohana Rohana, Muhammad Kristiawan. "THE PRINCIPAL'S STRATEGY IN PREPARING STUDENTS READY TO FACE THE INDUSTRIAL REVOLUTION 4.0",

<1 %

16

Adi Abimanyu, M.Eng, Misbah Habib Putra,  
Muhtadan Muhtadan. "DEVELOPMENT OF 5  
DOF ROBOTIC ARM PROTOTYPE CONTROL  
SYSTEM IN BRACHYTHERAPY PREPARATION  
BASED ON ARTIFICIAL NEURAL NETWORK",  
Jurnal Forum Nuklir, 2021

Publication

<1 %

17

Adri Lundeto, Ishak Talibo, Shinta Nento.  
"Challenges and Learning Strategies of Islamic  
Education in Islamic Boarding Schools in the  
Industrial Revolution Era 4.0", AL-ISHLAH:  
Jurnal Pendidikan, 2021

Publication

<1 %

18

"Proceedings of 3rd International Conference  
on the Industry 4.0 Model for Advanced  
Manufacturing", Springer Science and  
Business Media LLC, 2018

Publication

<1 %

19

Rani Hendriana, Nurani Ajeng Tri Utami,  
Angkasa. "Law Enforcement of Environmental  
Pollution and Damage", IOP Conference  
Series: Earth and Environmental Science, 2020

Publication

<1 %

20

Sri Nurhayati, Safuri Musa. "Analysis of  
Students' Internet Utilization to Improve

<1 %

# Public Information Literacy in the Industrial Revolution Era 4.0", Society, 2020

Publication

21

Fulin Chi. "Winning at the Turning Point", Springer Science and Business Media LLC, 2019

Publication

<1 %

Exclude quotes      On

Exclude matches      Off

Exclude bibliography      On