

GLI GLOBAL
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INSIGHTS

**AI, Machine Learning
& Big Data**

2021

Third Edition

Contributing Editors: **Matt Berkowitz & Emma Maconick**

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Global Legal Insights

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Korea

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Trends

As one of the world’s top countries in terms of IT, Korea has great interest in intelligent information technology. The Intelligent Robots Development and Distribution Promotion Act, establishing and promoting a policy on the sustainable development of the intelligent robot industry, was enacted as early on as December 2008. When the match between South Korean Go grandmaster Lee Sedol and Google DeepMind’s artificial intelligence (“AI”) program, AlphaGo, was held on March 2016, AI became a sensation to South Koreans. Together with the boom brought by the match of the century and the government’s support, intelligent information technology and its market are growing rapidly. There is no notable effect of COVID-19 on the Korean AI industry other than people’s interest in the application of AI in the medical area, including finding a cure for COVID-19.

The Korean government established and operated an advisory committee for the intelligent information society in October 2015. After the announcement of the “Plan for Intelligent Information Society Strategy” in January 2016, the government announced that it would invest ₩1 trillion (US\$863 million) in AI research over the next five years. In addition, the government-constituted task force for the strategy, comprising 10 government institutions and private experts, held seminars and conference to share concerns and ideas with the public, finally announcing the “Mid- to Long-Term Intelligent information Society Plan For the 4th Industrial Revolution” in December 2016. The plan describes intelligent information technology as a technology which implements data processing abilities, such as recognition, perception, inference, etc., at a human level, by converging AI technology and data utilisation technology. Data utilisation technology refers to the Internet of Things (“IoT”), cloud computing, big data and mobile (“ICBM”) technologies, in preparation for the 4th Industrial Revolution. Put simply, huge amounts of various data collected by IoT will be transferred, saved and accessed in great speed everywhere by cloud computing and mobile technologies, and will then be processed by AI. Recently in December 2019, the “National Strategy for Artificial Intelligence” was announced.

Ownership/protection

Big data

Big data represents the information assets characterised by high volume, velocity and variety to require specific technology and analytical methods for its transformation into value. The definition and concept of big data are still vague and developing, and this makes ownership and protection issues more complex.

One of the most complex issues is the ownership of big data using external data. If a set of big data consists of data created and uploaded by Facebook users, can we say the big data is

owned by the producer of the big data? Or is it owned by the users? To make the issue even more complicated, the privacy issue may be introduced. Is the user's consent required? If so, to what extent does a producer need to obtain consent from the user? If not, can the user refuse or request to stop the use of his data? This is not a novel, fresh issue, and there are a number of studies and papers on the subject, but the government has not yet made an official statement in relation to it; thus, how big data can be protected under the current Korean legal system should be reviewed, unless new legislation is enacted.

In Korea, collections of data such as databases are protected under the Copyright Act if certain conditions are met. If the collection has a creative nature in terms of the selection, arrangement or composition of its materials, it is protected as a compilation work. In case such creativity is not present, its producer can be protected if the collection is a database, which is defined as a compilation with materials systematically arranged or composed so that they may be individually accessed or retrieved; and the producer has made a substantial investment in human or material resources for the production of the database, or for the renewal, verification or supplement of their materials.

Because big data collects an enormous amount of data in various forms, it is not unlikely that data is selected or selected in a creative way. Consequently, a big data set is not a compilation work, and the producer can be protected under the Copyright Act only if it is systematically arranged with sufficient investment. A big data set is processed before storage, but the data processing method is different from that applied to a conventional database. If the court or authority finds the data to be arranged in a systematic way, the person who made a substantial investment for the production of the big data would be protected under the Copyright Act.

Database producers have the rights to reproduce, distribute, broadcast or interactively transmit the whole or considerable parts of a relevant database, but individual materials of the database shall not be considered as the considerable parts of the relevant database. A database will be protected for only five years, which is considerably shorter than that of other types of copyright works, which are protected for 70 years after the death of the producer.

Creation by AI

As AI technology develops, it is not surprising to hear the news that an AI system has composed music, drawn a picture, written an article, and so on. Currently, the Copyright Act in Korea protects works that are creative productions expressing human thoughts and emotions. Clearly, AI is not accepted as human, so a creation by AI is not protected under the Copyright Act. Some propose to protect a creation by AI as a work made for hire, which is a work made by an employee during the course of his duties. The employer will be the author of a work made for hire if such work is made public under the name of the employer, unless otherwise stipulated in the contract or work regulation. No matter how attractive the idea is, the application of the principle of work made for hire does not seem to be an answer, as the employee should be a human and works should contain human thoughts and emotions.

The ownership and the protection of data and works of the 4th Industrial Revolution are not clear or sufficient under the current Korean legal system. A new and comprehensive legislative framework will be required in the near future.

Antitrust/competition laws

Big data enables a company to establish a very effective marketing strategy for each individual customer, by giving companies a better idea of what the customer wants and

the channel they typically use when buying. Being aware of the power and value of big data, the market and the government are now starting to fear that big data could create barriers to entry and market power, especially where a company holds datasets that require enormous time and money to establish or cannot be easily accessed by competitors. Big data holders may have an unfair advantage over competitors, resulting in harm to consumers and competitors.

The 2018 economic policies released in December 2017 by the Ministry of Economy and Finance (“MOEF”) pointed out that the data-based industry, which includes big data and AI, is vulnerable to a monopoly by a small number of frontier companies. Any practical regulation or restriction is yet to be adopted, but the MOEF announced that it will monitor the data-based industry for unfair trade and competition.

The Korean government also announced that it will disclose public data and provide means to access and utilise data containing private information owned by government authorities.

Board of directors/governance

Data governance is a data management concept concerning the capability of an organisation to ensure that high data quality exists throughout the complete lifecycle of data, thus ensuring that value is derived from it. It is generally achieved through a combination of people and processes, with technology used to simplify and automate aspects of the process.

Regarding data governance at the level of national or public society, such as with regard to the population census, traffic volume, unemployment rate, etc., the Korea Information Society Development Institute (“KISDI”) issued a report proposing to upgrade the data governance of national statistics by: 1) strengthening the National Statistical Office by making it independent from other government authorities, and providing it with stronger powers to adjust its budget; 2) carrying out business process reengineering, which will enable the automated collection of data in the course of daily work; 3) establishing the basis and system to utilise private data in national statistics; 4) collecting and combining administrative records held by central government and local municipal governments; 5) adopting an autonomous quality assurance system for private data, to ensure standardisation and credibility; and 6) developing a sustainable data management practice, which will allow the use of data in research while protecting privacy and data more effectively than before.

Regulations/government intervention

There are numerous acts in force that are partially related to the intelligent information society; for example, the Framework Act on National Informatization, the Software Industry Promotion Act, the Act on the Development of Cloud Computing and Protection of its Users, the Intelligent Robots Development and Distribution Promotion Act, the Special Act on Promotion of Information and Communications Technology, and the Activation of Convergence Thereof, etc. Most of the aforementioned acts are concerned with how to encourage and accelerate the development of the intellectual information technology. To integrate and harmonise regulation of the intelligent information society, in February 2017, the bill for the Basic Act on Intelligent Information Society was submitted to the National Assembly, and is under review. Again, the Act proposes rules to facilitate the development of the intelligent information society, but does not contain any detailed regulations on practical issues such as ownership, antitrust, governance, etc.

In an effort not to intervene with or hinder the development of AI, Korea is currently focusing more on publishing non-binding ethical guidelines and rules for AI rather than establishing

detailed regulations. Following ethical guidelines for the intelligent information society (so-called “Seoul PACT” (publicness, accountability, controllability, and transparency)) in April 2018 and the charter of ethics for the intelligent information society in June 2018 published by the Ministry of Science and ICT (“MSIT”), the Korean government announced an ethics standard under the theme “AI for humanity” in December 2020 to stay aligned with global AI standards. The standard states that human dignity, public benefit and the rightful purpose of technology as three fundamental principles to be complied with throughout the lifetime of an AI. In detail, human rights, privacy, diversity, infringement, pursuit of greater good, solidarity, data management, responsibility, safeness and transparency are suggested as 10 key elements to be kept to be in compliance with three fundamental principles.

In January 2020, the three major pieces of legislation which promote and govern the use of data, the Personal Information Protection Act (“PIPA”), the Act on Promotion of Information and Communications Network Utilization and Information Protection, Etc. (“Network Act”), and the Credit Information Use and Protection Act (“Credit Act”), have been amended as follows:

- PIPA adopted the concept of anonymised data and pseudonymised data. The former is partially replaced or deleted personal data so that an individual cannot be recognised or identified without use of additional data. The latter is not explicitly defined in PIPA, but it can be interpreted as data from which an individual cannot be recognised or identified even if additional data is used or applied. PIPA allowed pseudonymised data to be processed for statistical, scientific research, or public interest record-keeping purposes, and exempted major obligations applicable to typical personal data, such as the user’s prior consent to collect data and release of data after a certain period of time. Of course, PIPA imposed other requirements and restrictions to protect personal data. For example, the combination of pseudonymised data owned by two different personal data controllers can only be done by professional agencies, a personal data controller should separately maintain the additional data that can be combined with the pseudonymised data which enables identification of individuals, and processing of pseudonymised data for the purpose of identifying an individual is prohibited. PIPA would not be applicable to anonymised data, as anonymised data is not interpreted as the personal data under PIPA.
- The main amendment to the Network Act was the deletion of provisions related to the protection of personal data, so that PIPA would be the main legislation which governs matters related to protection of personal data.
- The Credit Act was amended to provide the legal basis for analysing and using big data in the finance sector. Similar to PIPA, pseudonymised data can be processed for statistical, scientific research, or public interest record-keeping purposes without the user’s consent.

There are a few regulations that govern AI issues in a more practical manner. In August 2013, the Capital Market and Financial Investment Business Act allowed for the adoption of a robo-advisor in the financial industry. A robo-advisor is required to satisfy certain conditions on the part of the investor, such as the direct analysis of an investor’s propensity, their investment in at least two items, the readjustment of their portfolio in every quarter, their evaluation by qualified external experts and more, in order to give advice on investment and manage assets. Also, the Ordinance in relation to Safe Driving and Test Driving of AI Vehicles stipulates mandatory requirements such as functions, devices and labels for AI vehicles.

Implementation of AI/big data/machine learning into businesses

The most well-known AI-implemented business in Korea is AI interpreting services. Papago, created by Naver, Korea's largest portal site company, is capable of interpreting 14 languages; and Genie Talk, created by a collaboration between the Electronics and Telecommunications Research Institute ("ETRI") and Hancom, the Korean word processor software developer, is capable of interpreting nine languages.

There are more than six major smart speakers in the Korean market, which provide daily information, the time, weather and music, and some of them can be connected to a smartphone, TV or other home appliances (washing machines, refrigerators and air conditioners) that have IoT sensors, and it is expected to be more competitive as Samsung is to launch its own smart speaker.

AI is also playing an active role in the financial sector. Robo-advisors are providing tailor-made portfolios to clients by analysing the client's investment tendency, size of investment, preferred investment region, and so on. A chatbot that provides a 24-hour answering service to simple questions, an AI service that manages pension assets via its website and a mobile application are currently available on the Korean financial market.

In the medical sector, establishing a medical image big data station is a hot topic. There are more than five image data centres run by major hospitals. Korean hospitals are aiming to quickly adopt AI solutions in order to increase the accuracy of diagnoses. Also, AI services are being applied to telecare services and X-ray image interpretation.

The Ministry of Justice has launched an online chatbot service called Bubby, which provides legal information on real estate, leases, layoffs and inheritance. In addition to this, DR & Aju Law Firm has introduced an intelligent legal information system, developed by Intellicon Meta Lab, which helps a person to draft legal documents by automatically understanding the meaning of a sentence and changing word expressions into legal terms.

In addition, AI care robots for elders, AI English teachers for kids, AI manufacture or agricultural environment controllers to increase product efficiency, AI cleaners that search and delete photos of women taken without their consent and more AI are being implemented and used in Korea.

The launch and shutdown of an AI chatbot named Iruda would be an interesting AI example to review. Iruda is an open-domain conversational AI identified as a 20-year-old female college student. Iruda became very popular and collected more than 0.4 million users in less than a month, but soon users started to complain that Iruda was making inappropriate comments such as violent or obscene expressions and had started to insult sexual minorities and disabled people. After an investigation, it was found that a large portion of data used to teach Iruda, which was collected from a dating application, did not obtain users' consent for such use, was not properly pseudonymised, and was disclosed to the public in violation of PIPA. Iruda was launched in December 2020 and was shut down in three weeks, leaving many AI-related topics to be discussed and reviewed.

Civil liability

It is expected that AI will play a massive role in the intellectual information technology society. Hence it is important to discuss the principles for the compensation of harm or loss incurred by AI. For example, if a car driven by AI hits a pedestrian, who would be the party to compensate the pedestrian – the driver, the car owner, the car manufacturer, the programmer of the AI, or, if possible, the AI itself? Currently, there are debates over

whether AI can be covered under the conventional principles of the Civil Act, and there are some opinions that novel principles and legislation should be implemented for AI issues.

Under the Korean Civil Act, a person who causes loss to or inflicts injuries on another person through committing an unlawful act, intentionally or negligently, should provide compensation for damages arising therefrom. However, a person would not be considered negligent or in default unless the result of an act was foreseeable and could have been avoided.

If an AI's behaviour is to be governed by the fault liability principle, the supervisor's liability, the employer's liability, the structure possessor's liability and the animal possessor's liability, these principles may be considered respectively.

The supervisor's liability is applicable when a person who has caused any damage to another is exempt from tort liabilities, because he/she is a minor or incompetent due to mental unsoundness. If so, the person who is under a legal duty to supervise such person shall be liable to give compensation for the damage, provided that the same shall not apply if the supervising person has not been negligent in performing his/her duty of supervision.

A person who employs another to perform a specific task is liable for compensating any loss inflicted on a third person by the employee in the course of performing the specific task: this is called employer's liability. However, this shall not apply where the employer has exercised due care in appointing the employee, and in supervising the performance of the specific task, or where the loss has been inflicted even if the employer has exercised due care.

Neither of the liabilities mentioned above are applicable to AI, because AI is not a person. Even if an AI is accepted as a legal entity or person in the future, it seems that no user, possessor, owner or programmer could be found to have a legal duty to supervise or have employer-employee relations with the AI. Moreover, they would be exempted because they had exercised due care and were not negligent in supervising, as they had no means to supervise the AI, due to its autonomy.

The structure possessor is liable to damages caused to another person by reason of any defect in the construction or maintenance of a structure, although if the person in possession has exercised due care in order to prevent the occurrence of such damages, compensation for the damage shall be made by the owner. A structure is defined as any artificial thing, so AI would fit into this category. The hard part will be to define what is a defect of an AI. Because AI learns how to act by deep learning or machine learning using big data, it is not easy to say that an AI is defective, even if an AI made a wrong decision as a result. Furthermore, a possessor is just a user who does not know how AI works, or could not notice a defect of AI, if any.

Lastly, every owner of an animal is liable for any loss inflicted on a third person by the animal, unless the owner has not been negligent in taking due care for the custody of the animal, according to the animal's species and nature. This seems to be an attractive principle to be applied to AI because of the common features shared between animals and AI, in that they make decisions by themselves, and such decisions are unpredictable to their owners. However, in most cases an owner would have a much higher level of control and power over an animal than they would over AI. Consequently, it is questionable whether an owner who does not have control over AI can be responsible.

If an AI's behaviour is to be governed by the strict liability principle, the structure owner's liability and product liability may be implicated.

A structure owner is liable for a defect of a structure if the possessor is not involved in the construction or maintenance of such structure. Although the structure owner is strictly liable for the defect, the defect of an AI is hard to be defined or examined.

According to product liability, a manufacturer shall compensate for damages to the life, body or property of a person caused by a defect of a product. Here, the definition of defect again becomes a problem. There are three types of defect defined for product liability:

- “Defect in manufacturing” means the lack of safety caused by the manufacturing or processing of any product not in conformity with the originally intended design, regardless of whether the manufacturer faithfully performed the duty of care and diligence with respect to the manufacturing or processing of the product.
- “Defect in design” means the lack of safety caused by the failure of a manufacturer to adopt a reasonable alternative design in a situation where any damage or risk caused by the product would otherwise have been reduced or prevented if an alternative design had been adopted.
- “Defect in indication” refers to cases where damages or risks caused by a product could have been reduced or avoided if a manufacturer had given reasonable explanation, instructions, warnings or other indications concerning the product, but he/she fails to do so.

A defect in manufacturing is not applicable to AI, as AI will be developed in a way different from the originally intended design by deep learning. There would be no defect in design, because no alternative design is adoptable. An AI programmer or manufacturer would not be liable for defect in indication, either. Furthermore, the product liability can be exempted if 1) the manufacturer did not supply the product, 2) the existence of the defect could not be identified by the state of scientific or technical knowledge at the time when the manufacturer supplied the product, 3) the defect is attributable to the manufacturer who complied with the standard prescribed by any act or subordinate statute at the time when the product was supplied, or 4) in the case of raw materials or components, the defect is attributable to the design or the instructions on manufacturing given by the manufacturer of the product for the relevant raw materials or components.

In summary, the conventional civil liability principles in Korea are not sufficient to cover damages caused by AI. The introduction of new principles and legislation after thorough discussion in relation to AI is desired.

Criminal issues

Under the conventional criminal liability principle in Korea, a natural person should be criminally liable. Can AI, then, be liable for a criminal act? There are three types of AI: weak AI; strong AI; and super AI. Weak AI can only perform based on the algorithm programmed by a human. In contrast, strong AI is a machine capable of performing any intellectual task that a human being can. Strong AI upgrades, modifies and develops the algorithm originally programmed by humans, resulting in behaviour deviating than that programmed by the original algorithm. Super AI is an AI machine that understands the human mind and/or even surpasses it. Although it may sound uncomfortable, we cannot deny that strong AI or super AI has the potential to be accepted as a natural person. However, this would not become reality in the near future, and the question of how AI can be punished or penalised arises. There is already an exception that a non-natural person can be criminally liable: companies are criminally liable for an employee’s committed crime if a legal provision explicitly stipulates so. This exception cannot apply to AI, because the AI is the one who carried out the criminal action.

If AI cannot be criminally liable, can a user or a programmer of an AI be criminally liable for the AI's action? On one hand, there is no doubt that a person who uses AI as a tool to commit a crime will be criminally liable. On the other hand, it is arguable that a user or a programmer would be liable for the AI's autonomous criminal action. Conventionally, a person would be criminally liable if an action's criminal consequence is foreseeable and avoidable to that person. Although it is hard for a user or a programmer to predict the AI's action after deep learning, this means that no one will be liable for the AI's action, and, consequently, the user or programmer will not endeavour to prevent such criminal action. Some argue that a user or a programmer should be strictly liable for an AI's criminal action, but this would greatly discourage the use or development of AI.

As interest in AI and the intelligent information society grows, concerns and discussions on AI's criminal liability is increasing in Korea. AI's criminal liability will be determined by new legislation, and ample study, review, scrutiny, debate and discussions are required for balanced and righteous legislation.

The Korean government is aware of potential criminal action using AI, such as deep fake, and will establish rules and regulations to prohibit such wrongful use.

Discrimination and bias

Often, AIs are mistaken to be always emotionless, fair, neutral and equal. However, there is a risk that AIs may become discriminative and unjust if machine learning is carried out using a biased database. The MSIT's charter of ethics requires that decisions automatically made by intellectual information technology should not be socially prejudicial or discriminative.

In addition, discrimination results if AIs cannot be used or accessed by certain types or classes of people. Sharing the same concern, the MSIT's charter of ethics states the principle that the deliverables and benefits of intellectual information technology should be equally owned by the public. The Intelligent Robots Development and Distribution Promotion Act also requires the government to prepare measures necessary for facilitating the development and distribution of intelligent robots to improve the convenience of using AIs, so that socially disadvantaged people, such as the disabled, the elderly and low-income earners, can enjoy opportunities for and benefits from free use of such robots.

National security and military

According to the information released by the Ministry of National Defense in September 2018, there are a number of projects under way to adopt AI and big data technology to enhance national security and military power. First of all, surveillance and reconnaissance will be performed by AI, enabling 24-hour supervision and greatly increasing accuracy. Soldiers will be trained using virtual reality, augmented reality and mixed reality, which provides a more realistic and detailed experience. Military equipment and assets will be managed and inspected by AI based on machine learning, so that they can be kept in consistent good condition. Finally, military hospitals, in cooperation with private hospitals, will establish the use of medical data as big data.

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As an experienced patent lawyer with extensive commercial transactional experience in various specialty industries including entertainment, ICT and healthcare, Won H. Cho is uniquely positioned to advise clients in a wide range of complex IP, corporate and regulatory matters. He started his career as an associate at Bae, Kim & Lee LLC (“BKL”) and went on to serve as a partner of the firm, leading BKL’s prominent intellectual property and technology transaction practices, spanning a total of 16 years. Mr. Cho also worked on secondment at Ropes & Gray (New York) in 2014 in the firm’s Intellectual Property division. He has earned a reputation at home and abroad as an exceptional multi-disciplinary lawyer with deep and extensive career experience representing local corporations, multi-national companies, government agencies and non-profit organisations. Recently, he has been actively advising clients in the blockchain industry.

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