A Study on the Autonomous Decision Right of Emotional AI based on Analysis of 4th Wave Technology Availability in the Hyper-Linkage

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무한연결시 4차 산업기술의 이용 가능성 분석을 통한 감성 인공 지능의 자율 결정권에 관한 연구

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Abstract The effects of artificial intelligence technology is social science research as research on the impact on industry and changes in daily life, etc. This means that developing `emotion AI` will prepare 'next-generation 3D-vector-sensitive AI`. This suggests the main keywords of the tertiary AI decision-making power. Particularly important results will be achieved because of the importance of current unethical learning and the implementation of decision-making systems that reflect ethical value judgments. This is a data based simulation, and required (1)Available data, (2)the technology for the goal of simulation. This takes into account the general content of the intended simulation based research. Currently, existing researches focus on meaningful research motivation, but this study presents the direction of technology. So, empirical analysis is consistent with the decision-making power of each country vs. new technology firms for AI on ehtic responsibility. As a result, there is a need for a concrete contribution and interpretation that can be achieved for the ethic Responsibility, on the technical side of AI / ML. In AI decision making, analytic power of human empathy should be included tech own trust.

Key Words : Vector emotion, Autonomous decision, Social-reliability, 4th-wave, AI Ethic, Empathy

요 약 본 논문은 인공 지능 기술의 효과는 산업에 미치는 영향과 일상생활의 변화 등에 관한 연구이다. 또한 감성 인공 지능 개발은 차세대 3D 벡터 감응 인공 지능을 대비한다. 이것은 인공 지능의 의사 결정 권력의 주요 키워드를 제시한다. 특히 비 윤리적 학습의 중요성과 윤리적 가치 판단을 반영하는 의사 결정 시스템의 구현으로 인해 중요한 결과가 달성된다. 이것은 데이터 기반 시뮬레이션이며 (1) 사용 가능한 데이터, (2) 시뮬레이션 목표를 위한 기술을 필요로 한다. 실제 의도 된 시뮬레이션 기반 연구의 일반적인 내용을 고려한다. 현재 기존 연구는 의미있는 연구 동기에 중점을 두고있느나, 본 연구는 기술의 방향성을 제시하는 결과이다. 그 결과 실증분석은 각국이 인공 지능에 대한 신기술 기업의 윤리 책임감에 대한 의사 결정력과 일치한다. 결론적으로, AI / ML의 기술적 측면에 대한 윤리적 주제에 대해 달성 할 수 있는 구체적인 기여와 해석이 필요하다. 이는 인공지능 의사 결정에서 인간의 공감의 분석력이 더욱 부각될 수 있다.

주제어 : 벡터감정, 자율결정, 사회신뢰, 4차산업, AI, 윤리, 공감

1. Introduction

1.1 Impact of the hyper-linked network on the industry

How does artificially intelligence improve our hyperconnected network society? For example, the research theme is the impact on the research target industry and society of super-connected network AI. In the text, "The hyper-connected network is clearly combined with various keywords according to the situation to try to interpret the meaning that affects the economy. Therefore, I would like to illuminate the relevance of the research theme song on the decision-making power of AI proposed in this project, because it is presented as a new task. It is possible to establish a substantial evaluation of detailed research themes and conductivity by proposing a specific research content and evaluation method.

In the future, in the case of "analysis of the impact of the hyperconnected network on the industry", Some purpose AI research is clearly set as ethical behavior. In the case of "applying the decision right to apply effective emotion AI technology ", there is a lack of discussion of ethical issues and technical details for the materialization of this topic. It is a reality.

The present and future artificial intelligence technology can be adapted to people's ability and needs, provide advanced educational services, the development of new science and technology can reflect the result in the policy. In order to maximize positive impacts and minimize negative ones, humanitarian disasters must be dealt with quickly, more importantly prevent, detect and investigate all frauds. A hyperconnected network society will be formed, turning to a new industrial structure, enabling efficient management of large amounts of big / small data.

The ethic purpose is to guide the direction of desirable technological change from the beginning of AI policy establishment. So it changes of job structure in the consolidated network AI society.

As a result of artificial intelligence, some harsh operations or unpredictable tasks appear in new jobs. The use of artificial intelligence can help to summarize large amounts of data to aid the physician's diagnosis, providing more accurate information and suggestions for decisions. AI ultimately improves people's ability.

In line with the background of the aging society, artificial intelligence provides new solutions to support more people to join and maintain the labor market, including those with disabilities.-Each different task is to be replaced by normal operation.

It's hard to identify every process of the job at every step of the job, making it clear while accurately quantifying it for tasks requiring artificial intelligence.

1.2 Applying decision-making power through effective emotion AI

Various artificial intelligences have learned and used daily life in the form of intelligent algorithms to make life more convenient and prosperous[1-3]. Currently, multinational companies use Facebook or Amazon friends and personalized product recommendations, Netflix, YouTube, Match.com video and dating candidates, Tesla and Google autonomous vehicles, navigation directions and more[4].

However, there are still definitions and socially unacceptable accidents (for example, it is estimated that approximately 90% of road traffic accidents are caused by human error). This allows developed emotional artificial intelligence to self-determine and act in the near future.

The error or reward/loss concept that causes AI decision making (enhanced learning) is the same as the first type of emotional stimuli. Artificial intelligence is because it is not expressed in a way that humans know in the learning process.

Currently, this is considered a decision of secondary AI.

The study is the decision-making right of the emotional AI which can recognize and judge the next generation 3D vector and how to experience the uncertainty (ethical thing) that is not defined as certain actions (compensation / loss, punishment) area. So, the three-dimensional emotional AI means 3D-Vector emotion AI.

The next generation 3D-Vector emotion AI is assumed as the decision right of the third AI. In the existing research, how to judge the three-dimensional selection behavior (uncertainty or unpredictable choice: ethics, etc.) must be a key research task, as Fig. 1.

Finally, the three-dimensional emotional AI selects an area that can be determined without social consent until it is defined and expressed as a social consensus and algorithmized.

AI must be reviewed whether this can be used in industry or in real life. 3D emotional intelligence decision making ability is adapted to them, and how much applied is an important issue.

Many high performance algorithms are currently used in many smart services. In these areas, the development and improvement of algorithms is the source of new competitiveness.

2. Analysis Model about AI Emotion of 4th wave

2.1 The AI role importance on the economic decision making

The fourth industry is sure to affect various aspects of industries and our lives, and Germany, the European Union, the United States and Japan are pursuing research directions, contents and methods in various forms at the national level.

It comply with ethical and legal issues related to robotics and autonomous systems, i.e. aspects related to automation and robots' impacts on occupation and work environment as well as accountability and safety.

For the AIindustry and digital services, including robotics, as well as cognitive vision, from the mission of computing and the autonomous system in the field of drones and unmanned vehicles, it should develop a competitive industrial robot and artificial intelligence.

Korea's digital AI should be ahead of the leading countries. The robot contract participates in the PPP and is responsible for the development and implementation of the relevant strategic industry agenda. Manage the RD&I project at the AIsite and ensure proper linkages with relevant national and local events.

First, it is international aspects of AI emotional decision making.

The European Union has been shocked and selected strategies for priority implementation at the EU level and priorities in each country. For the sales of the three major IT companies - Amazon, Google and Microsoft - are much higher in Europe than in the high-tech Italy[5].

Most of them want to create industrialization, economic revival, social infra and job creation based on IT industry, especially artificial intelligence[6].

In particular, research on artificial intelligence in the United States, Europe, and Japan has been conducted far in advance of Korea, and there are many researchers[7,8], so infrastructure is a very good situation, which is a pragmatic application of artificial intelligence[9].

AI is a strategic approach to dealing with ethical issues as research model[10].

First, Emotional AI technology application analysis[11],

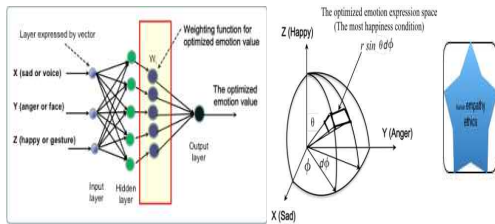Second, Analysis of AI specialization cooperation research,

Third, AI 4th job change and substitution,

Fourth, Activation and standardization of next-generation 3D sensibility AI industry,

Fifith, Establishment of AI decision-making right

for uncertainty and unpredictable situations, Sixth, Social consensus of emotional AI technology[12].

‣ Research Model [13]

Fig. 1. **The 4th Wave ethic conception of AI role on the decision making, (Emotion AI role vs. Human empathy) [13]**

2.2 Premise and hypothesis of 4th wave AI

- Premise 1: AI expansion in the era of hyper-linkage creates new social economy with application of new technology

- Premise 2: Firms will develop new technology development by giving creativity to AI, 3D emotional decision making ability, and doing socio-ethical behavior by oneself.

It is the basis of derivation for the research premise. Based on Premise 1, is the new job creation and influence analysis of AI technology industry. They have to analyze AI's international research trends (including the US, Europe, Japan and other major countries)[14,15]. Also, analyze global trends based on AI emotional decision making.

Government is to make giants representative standardization index for AI digitization. It reduces professional differentiation through ethical analysis of the applicability of AI technology by global companies and research institutions. The strategy of leading global companies build for that. On current status of research on AI technology applications by Korean companies and research institutes, It is momentary. Changes in human resource development change ethics in research status, industrial application status as university, primary

school, middle school.

By firstly analysis of the economic and social impact of artificial intelligence in Korea, including the framework of national security (predictable use).

This leads to the development of standards in the field of artificial intelligence devices that are constantly being adapted in line with technological advances. By further developing and promoting these safety standards and support in the International Organization for Standardization, domestic companies can benefit from competitive advantage and increase consumer confidence (evaluation of product liability guidelines and machinery guidelines).

However, futhermore it is of necessity and development of decision-making right of the next-generation 3D sensibility AI based on H 2.

Korea lacked awareness of artificial intelligence before the advent of AlphaGo in 2016, and then they need to study economic analysis. Since the emergence of the AlphaGo, the ability to judge unforeseen situations has been strengthened, and thus the social ripple effects are more important. Actual strategic research by economic ripple effects in academia, private sector, and industry in the next generation of 3D-sensitive AI is insufficient.

It is possible to decide on uncertain or unpredictable cases when given 3D Beta emotional AI, So to prepare such R&D. Therefore, it is necessary to study basic human resources development strategy, academic collaboration (before coding learning)on creative conception culture.

2.3. Hypotheses

Based on the above data, it is highly probable of the 4th industry variables.

Hypothesis 1: This is the ethic relationship between the strategic development of AI and the balance of the 4th industry variable.

Hypothesis 2: The ethic decision of the 4th wave

tech firms is related to the AI in the long term.

Hypothesis 3: Ethic based production maintence is related to the AI strategy role in the short term.

Hypothesis 4: The social impact from the outside of the 4th wave tech firms is related to the change of AI ethic in the long term.

3. Automous AI ethics

3.1 AI social interview & consultant

AI robots analyze interview documents or customer consultant, check recruitment or big data contracts, and commercialize insurance. In this process, the ethical issues determined by artificial intelligence are highlighted, as realizing the profit of real estate transactions or actual transactions through AI Deep Learning. This is because it is not an ethical transaction, but a transaction that extends to meet the needs of each customer or company. If a country or firms exclude ethical issues, they can expand the existing polarization of the workforce, regular layoffs, infinite competition systems and performance superpowers. It is time to regard humanity as the moral value of the values of the workforce.

3.2 Ethic Analysis on 4th wave AI life

Leading technology by ICT solution point out that the digital and smart world will be soon in front of AI robot life.

The core of artificial intelligence economic life is based on the social function of moral trust. This means that P2P platforms using blockchain will be competitive with large shared economies like Uber and Airbnb. Small private companies are also trusted by the blockchain. This leads to greater trust when the artificial intelligence ethics standards are linked by blockchain. But if morality is wrong, it may be the opposite.

The successful implementation of ML solves these critical issues, guarantees the balance of the

performance criteria (without harm), and predicts that the use of these models is relevant to the business Each can prove the importance of the same scoring machine with related black box issues. As the author mentions, this is the core of a more favorable candidate response and legitimate defense. This is particularly relevant to candidate or employee rights considerations regarding the GDP.

If firms have the ability to identify AI's rich and talented job seekers, the Board recommends that they apply for a new election. AI can be used to predict the impact of CEO sentiment on the company's future financial performance. First of all, the influence of the CEO emotion depends on the human emotion that interacts with the employee. Customers and colleagues who have a broad understanding of the term success should be able to use the AI tool to achieve the goals of the team members or potential and existing companies. Such comparisons are higher than attributes, physical patterns, races and genders. The team or firm value meets the requirements. But these tools are online and PC based. They also use AI.

The AI system can be manager, so the time benefit is very easy to handle the work. In the case of interviews, if the qualifications such as education or applicant's certification are quantified, the human depth side cannot be measured by the AI machine. The evaluation of creativity is easy to ignore and miss key talents. Therefore, in the whole society, without considering creativity or individuality, individuals will move toward a unified society that can only accumulate nominal norms. Artificial intelligence cannot choose human sympathy or white lies, so many people will disappear. Therefore, the changes in society are now faster and more accurate.

Artificial intelligence can make more reasonable decisions than humans, but if artificial intelligence makes decisions that are closely related to human life, it is because it closely controls human life.

Artificial intelligence decision making and human decision making are the result of considering multiple factors. For example, decisions based on compassion or compassion can only be done by humans, and therefore unpredictable results. In addition, humans judge through intuition, such as the first impression. However, because artificial intelligence is a data-based decision, it can lead to a lack of humanity in the decision-making process.

Is it possible to be attacked by a virus even if the blocking chain is blocked? In important work such as medical surgery or company interviews. Then, it becomes a society where creativity and other parts disappear.

By analyzing the algorithms of AI, it becomes an era in which people, as assets of the future, will establish specifications based on their algorithms. This is not the humanization of the machine, but the people are in the same direction.

While the practical application of artificial intelligence has progressed, it may be helpful to take advantage of limited time, but at the same time various risks can be expected like personal information risk, democracy and governance risk. AI is still used as a tool rather than a smart tool. However, when the AI makes a decision, it may violate personal autonomy and ignore emotions.

Depending on big data and relying on only AI, which makes rapid and dramatic decision making, individuals may have difficulty rejecting their subjective determination and expressing their opinions where they need collective intelligence.

AI has the right answer in every job, but it seems that artificial it always finds the right answer and asserts that this is the right answer, and that human autonomy has disappeared.

If the AI makes a decision on their behalf, they will focus on efficiency. A flexibility and recognition will often disappear. Through the theory of prosperity, people can do what they want to do and what artificial intelligence does, because people

pursue only value rather than fair efficiency. This is a continuing controversy when the AI makes decisions through it. The trivial thing is that the AI's decision was made by humans.

Focusing on objectivity and fairness, AI's decision-making is a big help. It lacks humanity and emotion and becomes a somewhat rigid society. AI is just a machine that uses data to produce results. When entering emotions, there are many conflicts that can occur because of the differences in human decisions made through many thought processes, and sharing can be difficult. If a decision is made during the AI, the decision is unified in one direction, and the reflection of a few opinions is also a problem.

There is a great opportunity to be realized with the implementation of Machine Learning. The transparency of the model and the ability to explain the necessary problems have been carefully considered due to the bias of the data used to train the model to lack of balance.

The important thing is to have a clear and meaningful purpose. And decide if you want to use or not to use AI and other tools.

First. the AI tool implicitly assumes less deviation than humans. In fact, it applies to human interviews and does not apply to AI interviews. People knows a lot of examples of AI tools that show prejudice and complete racism. The problem lies in the learning data set used by ML and AI systems. but they are very vague. Second, the interviewer is a small but misleading judge, but the AIsystem is wrong and industry size can make biased judgments and it is much harder to examine that human bias can be detected.

3.3 Economy change on ethic and empathy ability

The reason for requiring empathy is because it is an area that artificial intelligence does not have like attempts to gain experience.

The empathy ability is to understand the feelings

of others by listening to others' words. To improve empathy, it is necessary to be aware of the concept of empathy. The education about the diversity of emotions is also necessary. It is empathy to understand the feelings of others and to cope with them. It is also necessary to create a society in which empathy is taken for granted. The other is an active communication. It is also necessary to have the ability to listen to others' words in order to understand opponent's situation.

Empathy is a socialization. What is most needed for empathy is to think in terms of others. If there is no empathy ability, it is inevitable that it will be taken away from the community, so it will try to cultivate empathy while belonging to the community.

Policies are needed to train them. This is also important for programs that need to work on their own. This leads to a career in which AI have not various experiences. A prerequisite is required for sympathetic ability, by changes in keyword data interest as Table 1. The condition is that the person needs to be able to grasp quickly and listen carefully. Starting with the favorable condition of others, hobby, work, religion, etc. In order to have empathy, the sharing of the 4th revolution era is a prerequisite.

Table 1. Keyword data of SWOT analysis (google data, 2019.7: author own made)[13]

Strengths	Data adaption rate,Korea(world)	Weaknesses	Data adaption rate,Korea(world)
• Sympathy		• production	
• Emotion	0.39(0.85)Unvalue	• service	0.62(0.77)Value
•Specifications	0.51(0.85)Undervalue	• IT service	0.84(0.99)Value
/	0.67(0.84)Value	/	0.69(0.88)Value
• Sad	/		/
• Anger	0.75 Value	• Creation	0.48(0.82)Undervalue
• Happy	0.46(0.85)Value	•Enchantment	0.58(0.99)Unvalue
• Neutral	0.44(0.30)Value	• Business	0.73(0.94)Value
• Community	0.69(0.84)Undervalue	• IoT	0.45(0.83)Undervalue
	0.83(0.93)Value		
Opportunities	**Data adaption rate**	**Threats**	**Data adaption rate**
• Cooperation	0.47(0.75)Unvalue	• Inhuman	0.0(0.66)Unvalue
• Sharing	0.50(0.89)Value	• Equalization	0.64((0.59)Value
•Convergence	0.63(0.58)Value	• Mechanization	0.46(.0.29)Value
/	/	/	/
• Complexity	0.68(0.71)Value	• Cavitation	0.27(0.85)Value
• Simple	0.84(0.87)Unvalue	• Grouping	0.35(0.65)Value
• Neutralize	0.0(0.77)Undervalue	• Personalization	0.32(0.33)Unvalue
• AI	0.47(0.46)Unvalue		

It mentions that AI, Smart City, IoT, etc., as well as the quality of our customs and work, build ethical behavior and create empathy for new jobs. It affects social patterns and economics with moving to a digitized society like AI.

First, digital education at each stage and national AI education.

Second, support data service production

Third, AI education support for each individual thing.

Fifth, support for building A-related ICT area

AI expects a positive outlook on AI even if labor productivity is high, as the number of employees increases. First, AI Strategic Plan, Second, AI education and training for employment.

Core Ethics Convergence: Smart Business Company, Home Smar t City, Information Security, Security Technology, Simulation and Optimization Technology, e-Learning System, Big Data, Data Mining, Software Development, Remote Monitoring System, Cloud Computing, Mobile Internet Application Development , Location based services, 3D GIS, bioinformatics, IoT, 3D printing, next generation 6-7G technology, remote sensing,

computer based measurement and measurement, control improvement, numerical modeling and simulation, machine learning, empathy data center, Etc.

By letting Korean companies build ethics based on empathy of AI SWOT, markets and strategies can be found more easily for Keyword data as Table 1.

3.4 Empirical analysis

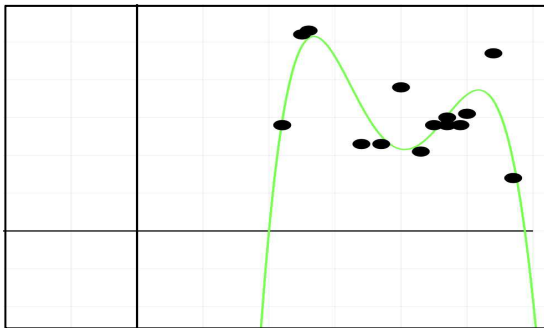A quintic regression is a function of the formas, Fig. 2.

Fig. 2. Reliability of each countries vs. new technology firms on AI (author own made)

Big data were analyzed for the reliability of each country and the association of new technology companies in 2018 according to the decision on autonomous driving of the new artificial intelligence as Fig. 2[16]. (Japen, Korea , Belgium , UK, US, India, Germany , Canada, South Africa, France, Italy , China, Brazil, Mexico, Southeast Asia).

quintic equation :

$$y=-1842.60+211.79x^2 + 0.15x^3$$

The closer the value of the coefficient of determination is to zero, the more useless the regression line is, and the larger the decision coefficient becomes $(R^2\rangle = 0.65)$, the usable regression equation becomes.

The result is,

R^2: 0.636325

However, this data does not normally produce a predictive model of the average, so is generally acceptable to be 0.02 smaller than 0.65.

As the fifth-degree polynomial becomes, the root values coincide. Still, empirical analysis is consistent with the decision-making power of each country vs. new technology firms for artificial intelligence on ehtic responsibility.

As a result, ethical regulations on artificial intelligence of new technology companies should be preceded.

4. Korea adaption about emotion AI

Technical application aspect is that the results of this study can be applied to the future AI strategy and the fourth revolutionary industry strategy.

First, a simple emotion recognition of AI should be made to share internationally[17], leading economic and socially by expanding the investment field (such as the growth field and providing the direction of the Korean industry rather than determining the decision). The small data based on this self-determination is open for industrial use. It is strengthen Korea's industrial leadership, enhancing scientific excellence, and addressing social challenges in areas such as health, transportation and agriculture. For this purpose, innovative introduction of artificial intelligence technology supporting AI application is required.

This issue should be supported and evaluated through the pilot phase of the Korea Innovation Organization.

Second, it is an economic aspect of emotion AI. AI's emotion vs. human compassion cooperation makes creative decisions. With launching AI for potential users nationwide, with a focus on small and medium-sized businesses, non-technical companies and public management, it will rapidly support and easy access via AI on-demand platform.

This is to introduce advanced algorithms and expertise; AI-centric digital innovation hub network

to facilitate testing and experimentation[18] including setting up an industry data platform to provide high quality data sets.

From 2019 to 2032, it will lead to ethical and compassion investment in Korea's digital AI science and technology field. The objective of this issue is to promote AI's private investment (at least 200 million won in 2019-25 billion won) based on Korea's strategic investment strategy. In the AI uncertain investment process, investment in emerging regions is considered to be important for investment economies through cooperation with countries with the United States and Europe and Korea's cooperation for economies of scale. In order to share an AI integrated industry, cooperative investment is required to foster and proactively foster an ecosystem integrated with AI, not a scaffolding for production bases.

Third, it is a side of social ethics agreement. It is very effective in deriving and obtaining social ethics from the importance of decision-making right of AI and the necessity of emotion. However, the emotional AI automatically determines ethics. This is because AI ignores the social empathic basis from the bias of some ethical re-review or issue, it can be abused as a crime. Current firms use artificial intelligence as a basis for brain utilization and autonomy. When applied to various fields of AI, it is used as a basis for preventing collision between AIs.

But in the high linked IoT, establishing AI decision-making rights is one of the factors that make the world a leading country. Each countries ignore human sympathy and prepare the countermeasures through the participation of the social members to the results of the new AI technology. They enhance the social acceptance by raising the understanding of the people's science and technology policy. Thereby it is promoting the social responsibility of science and technology engineers.

Artificial intelligence analyzes each person to fill needs and deficiencies, whether negative behavier or desirable things. AI is practically used because it is aimed at practicality beyond experiment in AI recognition and decision of each field. In the hyperlinked society, ethical laws and regulations created by linking existing objects with people should be reestablished with compassion.

In addition to the benefits brought by the industrial society, artificial intelligence should support the new problems andP train AI with the emotional impacts on compassion society.

The actual Korean H/W IT infrastructure is very good for tribal films or partnerships due to the risk of tecnology leakage, and, S/W's surface and much-needed development, currently requires a variety of civil/college open online accounts because Data builds how to use a small amount of data to train AI and (not yet) regulated. The government is aiming to achieve advanced digital technology and should provide all citizens with the meaning of "internship training internship digital opportunities. And the number of digital and digital experts in the dissemination of current coding skills to increase the number of digital technologies and business alliances' target behaviors, leading experts need to be established.

The European report "High-level Panel on Industrial Science and Technology" is a recognized "technology that enables core technologies"[19], emphasizing the role of innovation, the need for artificial intelligence and industrial use of artificial intelligence and EU industry leadership to maintain its leadership position in Europe[20]. The parties are concerned about, supporting and ensuring the right strategic financial value chain. In Europe, including the integration of AI to enhance the important project strategy forum launched by the gorvernment[21]. For Nordic, the leader in the practical application of AI investment and 1-2 in the ranking of infrastructure on artificial intelligence per GDP, especially in the Finnish AI test-bed (lab),

and considered the study commercialization to the "Digital AI" course at the University of Helsinki is open to all citizens and cooperates between Sweden and Estonia.

But this is not something to learn in a short time, the Soft skill that AI has not. First, it is very difficult to develop Soft skills such as empathy and communication skills. Second, Soft skills are very important in direct labor, in contrast, Hard skill is a necessary technical requirement to perform the job.

4. Conclusion

The paper researches and analyzes the direction of 4th wave with the AI. It is a change in the choice of technology application (new occupation) according to commercialization of AI and the choice of doctors of 3D AI emotion. It makes up everyone be prepared for the rapid social change of education and vocational training.

So 3D AI emotion leads to commercialization. First, in the practical applications of artificial intelligence, the leader of the nich market has the decision of emotion AI. Second, data simulation is the basis for testing new business models. Third, the creation of AI's ethics requires a long-time social consent as compassion. It reflects this because it deals with process, business, and socio-cultural aspects for a complex and specific field of AI.

Therefore, 3D emotion AI, such as researchers in real text and data mining, uses algorithms to examine large amounts of text (for example, extracting human texts of resumes, etc./ explanations of medical clinics, scientific experiments). In contrast, the ethics of creativity arise when conflicting with the belief that a new creative idea is correct or good[22], when AI and creativity collide with coincidence time. This is human empathy that included tech own trust. It now clearly understand AI-based applications by collecting AI ethics from consumer protection organizations and data protection committees. In addition, in an aging population, artificial intelligence including compassion can significantly improve public services and help achieve the goals set out in the e-government declaration.

REFERENCES

[1] A. M. Yazdani. (2012). Brain emotional learning based intelligent controller for stepper motor trajectory tracking. *Int. J. of Physical sciences, 7(15),* 2364-2386.

[2] W. J. BELL. (1991). *Searching Behavior: The Behavioral Ecology of Finding Resources.* Chapman and Hall, London, England.

[3] M. M. Cohen. & D. Massaro. (1993). *Modelling co-articulation in synthetic visual speech.* Springer-Verlag , 139-156.

[4] D. H. Kim. & Baranyi P. (2011). Novel emotional dynamic express for robot. *SAMI2011, Jan,* 27-30.

[5] D. S. Seo. (2018). Strategy of Market Spread-Commercialization in EVs Industry: Visegrad and Nordic Countries. *The International Journal of Industrial Distribution & Business, 9(3),* 57-68.

[6] D. S. Seo. (2017). The investment point on cooperative innovation in EVs for the spoke-smart cities: focused on Nordic countries and Korea. *The Journals of Economics, Marketing & Management, 5(3),* 1-11.

[7] D. S. Seo. (2016). The Role of Innovative Energy Public Firms' Channels according to Shale Gas for E-Convergence Economy. *The Journal of Distribution Science, 14(5),* 17-26.

[8] D. S. Seo. (2016). The Commerce Strategy towards Pan-European Innovation and Consumption: Spokes Partnership for FDI of Korea. *Journal of Internet Banking and Commerce, 21(S2),* 1-7.

[9] S. V. Valentin. (2018). Multivariate analytics of chromatographic data: Visual computing based on moving window factor models. *Journal of Chromatography B, 1092,* 179-190.

[10] J. Vel´asque. (1997). Modeling emotions and other motivations in synthetic agents. *In: Proceedings of AAAI-97, MIT Press,* 10-15.

[11] D. H. Kim. & D. S. Seo. (2019). Vector based 3D Emotion Expression for Emotion Robot. *ACM International Conference Proceeding Series,* 113-117.

DOI : 10.1145/3314493.3314499

[12] D. S. Seo. (2017). *Vehicle occupant safety confirmation system. Seoul : Korean Intellectual Porperty Office (KIPO).*

[13] D. H. Kim. (2017). *Tuning Innovation with Biotechnology.* Panstanford Publishing Co. - ISBN 978-981-4745-55-2.

[14] McKinsey Global Institute. (2013). *Disruptive technologies: Advances that will transform life, business, and the global economy.*

[15] C. Peter. (2006). *The Role of Emotion in Human-Computer Interaction.* The workshop's website is: http://www.emotion-in-hci.net.

[16] Deloitte. (2019). *Global Automotive Consumer Study.* https://www2.deloitte.com/us/en/pages/manufacturing/articles/automotive-trends-millennials-consumer-study.html(2019/3/1).

[17] H. K. Sim. (2008). *Neural networks and machine learning.* The Age of Artificial Intelligence, Pearson Prentice Hall.

[18] Atomico (2017). *State of European Tech.*

[19] EU center. (2018). Towards a European Strategy for Human- Centric Machines. November 30, 2018. https://ec.europa.eu/epsc/sites/epsc/files/epsc_strategicnote _ai.pdf.

[20] European Parliament. (2017). *Commission's report on Saving Lives: Boosting Car Safety in the EU.* November 30, 2018 retrieved from (COM(2016) 0787 final).

[21] European Commission. (2018). Responsible Research and Innovation workstream. retrieved from https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation.

[22] S. Moran, D. Cropley & J. Kaufman. (2014). *The Ethics of Creativity.* London: Palgrave Macmillan UK.

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