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## **Issues of Security and Ethical Responsibility that Accompany the Development of AI**

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The recent evolution of artificial intellect (hereafter referred to AI) in the study that has been promoted along with the development of computer has been nothing short of eye-opening. Since the 1950s, the study of AI experienced several times of rises and hardships but it has been achieving a rapid development after the recent advent of “deep learning<sup>1</sup>”, stepping out for a practical use from the stage of investigation.

In fact, Tractica, a US private research company, expects that introduction of AI system will be promoted by many companies since the emergence of deep learning has enabled various application of AI in such areas as backward desk works of financial institutions, image analysis, automatic translation, automated driving, etc. and forecasts its global market will expand from US\$202.5 million in 2015 to US\$11.1billion by 2024<sup>2</sup>.

As the ability of AI reaches more or less the level of human beings, however, it is also the fact that there has been emerging a vague sense of uneasiness such as “the human jobs might be replaced by AI”, or “AI might inflict harm on the human beings”, or “will the privacy information be protected by the use of big data”? There is an urgent need to establish a proper guideline on the social ethics and responsibility issue we face in everyday life and businesses in building appropriate relationship between human beings and AI.

In this connection, it is noteworthy that two NPOs have been established in the US to dispel such worries against AI and encourage broader use of it.

Regardless of difference of its contributors (corporates or individuals), both NPOs aim the followings:

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<sup>1</sup> The outline of deep learning has been explained in the article of the Eyes of IIMA No.44, “Will the Fintech destroy traditional financial institutions?---the possibilities and limits of credit assessment function automated by the deep learning”, June 27, 2016. [http://www.iima.or.jp/Docs/column/2016/0627\\_j.pdf](http://www.iima.or.jp/Docs/column/2016/0627_j.pdf)

<sup>2</sup>

<http://www.tractica.com/newsroom/press-releases/artificial-intelligence-for-enterprise-applications-to-reach-11-1-billion-in-market-value-by-2024/>

- (1) Enhance the social recognition on how AI can contribute to the humankind and how safe it is.
- (2) To achieve the above mentioned aim, any voluntary standards of the related industry should be connected to a rule making accompanied by the advice of relevant experts on the impacts, concerns and challenges that AI will have on the society and economy.
- (3) Encourage the participating companies to move in a cooperative way to prevent the abuse by the strong AI systems that are monopolized by a few number of companies or governmental agencies (Partnership on AI) and to make all the patents on AI open to the world in the future (Open AI).

Through this movement we may perceive their intention to strengthen their leadership and voice on AI policies among the countries.

Name of the NPO	Partnership on AI	Open AI
Establishment Date	September 28 <sup>th</sup> , 2016	December 11 <sup>th</sup> , 2015
Sponsor Base	Google Facebook Microsoft IBM Amazon DeepMind (Now appealing to Apple to participate)	Mr. Elon Musk (CEO of Tesla) Mr. Sam Altman (President of Y combinatory) Mr. Peter Thiel (President of Clarium Capital) Mr. Reid Hoffman (Co-founder of LinkedIn) etc.
Keystone of Establishment	To confirm that AI application is beneficial to the people and to the society	To evolve the AI in the direction of contributing maximum benefit to the entire mankind

In the meantime in Japan, the Institute for Information and Communication Policies (ICP) of the Ministry of Internal Affairs and Communication held in February this year a Study Group Meeting on Networking of AI and published a report titled “2016 Report of the Study Group on Networking of AI”.<sup>3</sup> In this report, the group analyzed some indicators and risk scenarios to assess the impact that the development of AI would bring to the society and emphasized the importance of broad discussions both at home and abroad aiming at establishing a principle and guideline for development of AI.

Also after having “Immediate Tasks” presented by the group’s interim report, the Internal Affairs and Communications Minister Sanae Takaichi proposed to the G7 ICT Ministers’

<sup>3</sup> [http://www.soumu.go.jp/menu\\_news/s-news/01iicp01\\_02000050.html](http://www.soumu.go.jp/menu_news/s-news/01iicp01_02000050.html)

Meeting in Takamatsu, Kagawa, held on April 29 and 30, to promote , with the participation of stakeholders from industry, academia and government centered around the G7 countries, an international discussion on the analysis of impact of AI network systems on the society and economy as well as on establishment of development principles for AI. Her proposal was endorsed by the ICT ministers.

**Formulation of Principles for Research and Development of AI  
(Development Principles)**

By reference to OECE guidelines on the Protection of Privacy, its Security Guidelines and others, and with participation of relevant stakeholders, it is important to start to develop principles for research and development of AI aiming to establish principles for research and development of AI as a global framework to be internationally referred to. In formulating the principles, at least the following points should be incorporated.

- (i) Principle on Transparency: To secure the accountability and verifiability of operation of AI network system.
- (ii) Principle on User Support: AI network system should support users and take consideration to appropriately provide them with opportunity to choose.
- (iii) Principle on Controllability: To secure the human controllability of AI network system.
- (iv) Principle on Security: To secure the robustness and reliability of AI network system.
- (v) Principle on Safety: To make consideration for AI network system not to inflict harm to the safety of life and body of the users and the third parties.
- (vi) Principle on Privacy Protection: To make consideration for AI network system not to violate the privacy of the users and the third parties.
- (vii) Principle on Ethics: To respect the dignity of mankind and self-discipline of individuals in making research and development of AI network.
- (viii) Principle on Accountability: The developers of AI networks should fulfil accountability to the users and related stakeholders.

As seen from the above, both domestically and internationally, the technological development of AI and AI network system and the ways of its use are evolving fast and at the same time interest is growing rapidly in social, economic and ethical challenges of their sophistication.

In this connection, it is necessary for Japan not only to continuously promote technological development of AI network systems but also, while keeping a careful watch over the overseas developments, to establish a close communication among industry, academia and government and draw a clear vision on the relationship between AI and humankind so that Japan can take a certain initiative at the time of developing common guidelines and rules over the development

and utilization of AI network systems.

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