JAPAN INTELLECTUAL PROPERTY ASSOCIATION

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To: United States Patent and Trademark Office
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JIPA's Public Comments on "Request for Comments on Patenting AI Inventions"

Director of United States Patent and Trademark Office

1. Inventions that utilize AI, as well as inventions that are developed by AI, have commonly been referred to as "AI inventions." What are elements of an AI invention? For example: The problem to be addressed (e.g., application of AI); the structure of the database on which the AI will be trained and will act; the training of the algorithm on the data; the algorithm itself; the results of the AI invention through an automated process; the policies/weights to be applied to the data that affects the outcome of the results; and/or other elements.

We submit that any of the elements that have been illustrated above can or could be an element of AI inventions.

In addition to the above-illustrated elements, we also submit that techniques associated with verification of precision of AI, data augmentation (a technique for expanding the size of a training dataset by creating new pieces of training data based on a certain piece of training data), techniques for converting raw data into appropriate data adapted for learning or training (preprocessing of training data), and techniques associated with maintenance of a trained AI algorithm, and the like can also be an element of an AI invention.

2. What are the different ways that a natural person can contribute to conception of an AI invention and be eligible to be a named inventor? For example: Designing the algorithm and/or weighting adaptations; structuring the data on which the algorithm runs; running the AI algorithm on the data and obtaining the results.

As long as the actions that are illustrated above are concerned, we submit that the contribution by the natural person can

or could be recognized as the basis for the natural person to be eligible to be a named inventor if the natural person performs any of these actions.

On the other hand, if a result itself created by running AI is an invention, then defining the requirements for obtaining the result, designing the AI algorithm, verifying the result, and other relevant actions can constitute a contribution by a natural person. In the meantime, careful discussions should be made to identify the specific degree or extent of contribution for an actual act of contribution to be evaluated as an inventor's contribution.

Further, we believe that a natural person cannot be an inventor of an invention that has been conceived only based upon AI, for he/she does not contribute to the conception of the invention.

3. Do current patent laws and regulations regarding inventorship need to be revised to take into account inventions where an entity or entities other than a natural person contributed to the conception of an invention?

We believe that the invention conceived through contribution by AI may encompass an invention whose conception is at least partly based upon contribution by a natural person and an invention whose conception solely depends upon AI. If "an entity or entities other than a natural person" such as an AIis recognized as an inventor, then it will follow that the former invention is a joint invention by an AI and a natural person and the latter invention is an invention that has only been made by an AI.

With regard to the issue that "an entity or entities other than a natural person" such as an AI should be recognized as an inventor and an invention whose conception is based on the contribution by "an entity or entities other than a natural person" should be protected in the same or similar manner as an invention made by a natural person, we hope that careful discussions will be made with the magnitude of its impact taken into account.

We would like to point out the following problems which may arise if "an entity or entities other than a natural person" is an AI.

- With regard to handling an AI as an inventor in the same or similar manner as a natural person, not only will it require extensive legal amendments, including amendment of the patent laws and regulations, but it will also require a social consensus on appropriateness of handling AI like a natural person having legal

rights and obligations.　Further, we believe that, if the AI is eligible as an inventor, then it will be necessary to implement rules for succession, assignment, etc. of the right to obtain a patent thereon.

- Even when inventorship of AI is denied, an invention that has been conceived through contribution by AI would be able to enjoy protection by a patent through amendment of patent laws and regulations to introduce a scheme for creating a right to obtain a patent, which should be inherently vested in or belong to a natural/judicial person that is a person who contributed to creation of the invention (an algorithm creator, proprietor, trainer, etc. of AI). Meanwhile, since the degrees of contributions should vary depending on the specific cases, careful discussions should be made on which person/entity the right to a patent should be inherently vested in.

- With regard to the issue that an invention conceived through contribution by AI is to be patent-protected, if it is not protected at all, then there will be a possibility that a natural person cannot exercise the right to obtain a patent belonging to him/her for a joint invention by an AI and the natural person, in addition to which another possible problem may arise that the AI's contribution to the invention is concealed and granting of a patent is sought therefor in the guise of an invention that is only made by a natural person.

4. Should an entity or entities other than a natural person, or company to which a natural person assigns an invention, be able to own a patent on the AI invention? For example: Should a company who trains the AI process that creates the invention be able to be an owner?

　　　We believe that who the inventor is will have a significant impact in the determination of who should be an owner of a patent of an AI invention.

　　　AI inventions may be classified into the following types or categories: (i) AI algorithm inventions, (ii) inventions associated with learning methods of AI, (iii) inventions associated with use of AI, (iv) inventions conceived through contribution by AI, and the like.

　　　Here, with regard to the inventions falling under the types (i) to (iii), a natural person who performed the corresponding act should become an inventor to whom the right to obtain a patent therefor should be inherently vested in.　In this case, the patent holder will be eventually determined in accordance with the agreement between the natural person and the company.

On the other hand, in the case of the type (iv), since an AI is not eligible to be an inventor under current patent laws and regulations, even a company that owns the AI and has trained it cannot be an assign of the right to obtain a patent of an invention conceived through contribution by AI, and consequently there would be no one who could be a patent holder for that invention.

A possible approach for solving the problem that arises in the case of the type (iv) seems to be introduction of a scheme that allows a company that trained the AI illustrated in the text of Q4 above to own a patent. Meanwhile, as has been stated in Q3, in this case, careful discussions should be made about to whom the right to obtain a patent should be inherently vested in or belong to.

5. Are there any patent eligibility considerations unique to AI inventions?

We believe that the patent eligibility regarding an AI invention should be determined in the same or similar manner as in the case of a software-related invention.

In the field of AI, since many companies have been developing technologies that apply AI to devices and services using learning algorithms provided as open source software (OSS) and its platforms, we hope that such technologies (inventions related to use of AI) will be properly protected. Currently, while Example 39 is illustrated in the 2019 Revised Patent Subject Matter Eligibility Guidance (2019 PEG) for determination of patent-eligibility of inventions related to learning methods of AI, we submit that there are no examples of determination made in relation to inventions associated with use of AI. Accordingly, we hope that how patent-eligibility of an invention related to use of AI is determined should be clarified using both case examples where patent-eligibility is recognized and case examples where patent-eligibility is denied. In particular, we respectfully request that the specific framework of determination be clarified regarding whether or not an invention related to use of AI is integrated into a practical application (2A Prong 2).

We note that, according to 35 U.S.C. 101, an invention eligible for protection needs to be not only novel but also useful, so that, in some situations of inventions conceived through contribution by AI, an applicant may have difficulty in sufficiently recognizing and explaining the utility in this meaning of the invention. We believe that careful discussions should be made regarding expansion of the

scope of protection to cover such an invention.

6. Are there any disclosure-related considerations unique to AI inventions? For example, under current practice, written description support for computer-implemented inventions generally require sufficient disclosure of an algorithm to perform a claimed function, such that a person of ordinary skill in the art can reasonably conclude that the inventor had possession of the claimed invention. Does there need to be a change in the level of detail an applicant must provide in order to comply with the written description requirement, particularly for deep-learning systems that may have a large number of hidden layers with weights that evolve during the learning/training process without human intervention or knowledge?

We submit that examination of AI inventions should proceed in the same or similar manner as in the conventional "computer-implemented inventions."

Meanwhile, in determination of the written description support, it will be necessary in the future to discuss whether or not the capability of AI should be taken into account to determine the ability of "a person of ordinary skill in the art." In addition, if the capability of AI is to be taken into account to determine the ability of "a person of ordinary skill in the art," we believe that a possible problem to be addressed is how the level of learning of AI at the time of filing of the application should be recognized in the examination.

We also note that AI inventions may include incomplete inventions that include desires, hopes, or wishes, which implies that the examination needs to be carefully conducted.

7. How can patent applications for AI inventions best comply with the enablement requirement, particularly given the degree of unpredictability of certain AI?

We submit that examination of AI inventions should proceed in the same or similar manner as in the conventional "computer-implemented inventions."

Meanwhile, in determination of the enablement requirement, it will be necessary in the future to discuss whether or not the capability of AI should be taken into account to determine the ability of "a person of ordinary skill in the art." In addition, if the capability of AI is to be taken into account to determine the ability of "a person of ordinary skill in the art," a problem to be addressed would be how

the level of learning of AI at the time of filing of the application should be recognized in the examination.

We also note that AI inventions may include incomplete inventions that include desires, hopes, or wishes, which implies that examination needs to be carefully conducted.

8. Does AI impact the level of a person of ordinary skill in the art? If so, how? For example: Should assessment of the level of ordinary skill in the art reflect the capability possessed by AI?

In the future, it will be necessary to discuss whether or not the capability of AI should be taken into account to determine the ability of "a person of ordinary skill in the art." As discussed above, if the capability of AI is to be taken into account to determine the ability of "a person of ordinary skill in the art," we believe that a possible problem to be addressed is how the level of learning of AI at the time of filing of the application should be recognized in the examination.

9. Are there any prior art considerations unique to AI inventions?

While the prior art for AI inventions can be handled basically in the same or similar manner as in the cases of software-related inventions, it will be desirable that situations be avoided where prior art documents in different technical fields are cited just because AI is applicable in various fields, which may lead to the consequence that non-obviousness of inventions related to AI applications is hardly recognized.

Meanwhile,in recent years, AI that generates prior art as countermeasures against a non-practicing entity (NPE) or for any other purpose has also appeared (All Prior Art: https://allpriorart.com/about/). Regarding such prior art documents created by AI, the speed of creation thereof is much higher than the speed at which a human makes an invention and the quantity thereof is enormous, whereas description and illustration of their technical aspects may be insufficient. We respectfully request that the description of any prior art documents generated by AI be sufficiently scrutinized if such a document should be cited in the examination.

10. Are there any new forms of intellectual property protections that are needed for AI inventions, such as data protection?

AI inventions may be classified into the following categories: (i) AI algorithm inventions, (ii) inventions associated with learning methods of AI, (iii) inventions associated with use of AI, (iv) inventions conceived through contribution by AI, and the like.

With regard to the inventions falling under the types (i) to (iii), we believe that these inventions are protected as a patent whose inventor is a natural person in a conventional manner but, with regard to the invention of the type (iv), careful discussions should be made regarding whether it should be protected by an intellectual property right such as a patent.

11. Are there any other issues pertinent to patenting AI inventions that we should examine?

We would like to present the following requests.
- If arrangements regarding handling of inventions conceived through contribution by AI do not progress, there is a possibility that cases will increase where a usurped application is filed by a natural person claiming that he/she invented the invention by false declaration. Further, if the criterion is ambiguous regarding the degree or extent of contribution that a natural person should make so as to be eligible as an inventor of an AI invention, then there may be cases where usurped applications are filed due to erroneous recognition. We respectfully request that rules be formulated for solving these problems.
- If an invention conceived through contribution by AI should be protected, then there may be an increased number of patent applications related to incomplete inventions that include desires, hopes, or wishes, so that we respectfully request that a patent should not be granted to such inventions.
- Resources should be prepared which allow prior art documents created by AI to be sufficiently evaluated and recognized.
- In order to obtain predictability of outcome of AI invention examination, we respectfully request that not only the guidelines associated with patent eligibility stated in Q5 but also the guidelines for examiners on how the AI inventions should be specifically examined be formulated and that such guidelines be disclosed to applicants as well.

12. Are there any relevant policies or practices from other major patent agencies that may help?

We believe that the JPO's examination guidelines for AI inventions and the like will be helpful. Regarding handling of AI inventions, we hope that systems will be harmonized in close cooperation with patent offices in other countries.

We respectfully request your careful consideration of the above comments at your decision on Patenting AI Inventions.

Yours faithfully

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Japan Intellectual Property Association