	European Patent Office	

Report from the IP5 expert round table on artificial intelligence

Munich, 31 October 2018

Executive summary

1. This document does not reflect any policy statement of the IP5 Offices or a particular patent office but only represents the workshop discussions.

2. Artificial Intelligence (AI) concerns algorithms allowing computers to self-improve computational tasks, including methods such as machine learning. The concept of AI originated in the 1950s, but only the recent significant increases in computational power have made practical applications of AI possible. As a result, AI is one of the drivers and a key element in the Fourth Industrial Revolution. In the globalised economy, the rapid development of AI technologies suggests a series of specific challenges for patent law and practice.

3. The IP5 Offices account for 80% of the global patent market and share the responsibility to increase efficiencies and legal certainty in the patent system. From a strategic perspective the IP5 Co-operation enables the offices to jointly remain at the forefront of developments and explore the impact of AI on the patent system and operations.

4. In the June 2018 IP5 Heads of Office meeting, the IP5 Offices were requested to explore the impact of AI, promote common understanding of the pertinent issues, prepare further discussions and develop policy options for the future. In this context, IP5 experts met on 31 October 2018 at the EPO in Munich to discuss specific legal aspects relating to the patenting of AI. The topics of this round table may serve as a basis for potential further work on AI issues by the IP5 Offices.

A. Introduction

1. The present document outlines the main points discussed in the workshop with regard to Inventorship/Ownership, Patent Eligibility, Sufficiency of Disclosure and Inventive Step.

2. Overall, the patent system seems to be adequately equipped to resolve issues relevant to the patenting of current AI technologies. However, a number of policy issues surrounding the rationale of the patent system, the application of patentability requirements and the interplay between patent protection and, for example, protection available for trade secrets, may need to be addressed in further detail. If AI technologies cease to be a mere tool for inventors and begin actively making decisions autonomously, the patent system may need to reconsider the development, ownership, transfer and exercise of rights.

B. Inventorship/ownership

3. From the perspective of inventorship, three types of inventions using AI technologies can be identified: (A) human-made inventions using AI for the verification of the outcome; (B) a human identifies a problem and uses AI to find a solution; (C) AI-made inventions, i.e. AI identifies a problem and proposes a solution without human intervention.

4. All IP5 jurisdictions require that the inventor is a human being.

5. All IP5 Offices acknowledge there may be certain difficulties for patent offices to determine whether a particular invention has been made by a human or a machine. Nonetheless, all IP5 jurisdictions require that the inventor be a natural person and should be designated as the inventor in the application. Non-compliance with this formal requirement could lead to issues during prosecution and, in some jurisdictions, even result in certain claims or the application being rejected.

C. Patent eligibility

6. The IP5 Offices apply the office-specific patent eligibility criteria to all inventions including AI inventions, which can exclude from patentability: abstract ideas, natural laws, or mathematical methods. However, currently, AI inventions usually fall into the category of computer-implemented inventions (CII) and any relevant examination guidance provided by the respective office may be applied.

7. Algorithms as such may not be eligible for patent protection. However, if the underlying algorithm is claimed as a series of concrete procedural steps solving a technical problem or is incorporated into a practical application, it can be eligible for patent protection.

D. Sufficiency of disclosure

8. Often in AI related inventions, the input and output is known but the logic in-between is not known. Even if the decision process is described, the performance of the same process does not guarantee the same result. That is why AI inventions can be difficult to disclose.

9. The requirement of sufficiency of disclosure remains fully applicable in all IP5 jurisdictions and can be met, for example, when the applicant discloses how the model was trained and provides the data used for training. Elements which can be expected to be known to a skilled person (e.g. how a computer works) may not need to be disclosed.

10. The applicant is required to fully disclose the claimed invention. If the inventive contribution is in the algorithm, the latter must be disclosed. If the contribution lies in the use of data and the algorithm is not part of the invention, then the algorithm may not need to be disclosed.

11. All IP5 Offices have strict disclosure requirements, including reproducibility and repeatability. However, the application of the requirement of sufficiency of disclosure allows for some flexibility. An overly strict application might discourage companies from pursuing patent protection and resort to use trade secret protection instead.

12. The current concept of considering an invention from the perspective of a skilled person has not changed; the level of skill in the art may increase with the widespread use of AI.

E. Inventive step

13. Currently, the concept of inventive step does not need to be modified to accommodate AI inventions.

14. All IP5 Offices apply the concept of the person skilled in the art, which currently remains unaffected because it considers that the skilled person has access to all knowledge and technology, including AI technology. The level of knowledge of the skilled person may vary, depending on the field of the invention and can sometimes cover various technological fields.

15. Due to the wider use of AI technologies the volume of prior art will presumably increase. At the same time the skilled person might be using AI increasingly and, consequently, the level of inventive step might change accordingly.