Artificial intelligence & Patent law

The European patent system: What role for patents in times of Artificial Intelligence, climate change and other global challenges?

10th GRUR meets Brussels Workshop
Thursday, 5 December 2019

I. Introduction

UNIVERSITY OF MANNHEIM
Department of Law

Do we need changes in patent law *de lege ferenda* in order to cope with the challenges presented by artificial intelligence?

What is AI?

1. **Strong AI**
   = strong AI is in the focus of (media) attention, however, 'singularity' still is science fiction
2. **Weak AI**
   = weak AI is supposed to master specific application problems of human intelligence; all AI present today is weak AI
   - Human-made inventions using AI for the verification of the outcome
   - Inventions in which a human identifies a problem and uses AI to find a solution
   - AI-made inventions, in which AI identifies a problem and proposes a solution without human intervention

I. Introduction

UNIVERSITY OF MANNHEIM
Department of Law

Thesis

The present patent system is largely adequate to cope with challenges presented by current AI systems.

II. Patentability of AI
III. The inventor/owner
IV. Conclusion

UNIVERSITY OF MANNHEIM
Department of Law

Art. 52 EPC – Patentable inventions

(1) European patents shall be granted for any inventions, **in all fields of technology**, provided that they are **new**, involve an **inventive step** and are susceptible of industrial application.

→ Need for a technical character!

→ only technical elements of the invention will be assessed for further prerequisites of novelty and inventive step

→ Necessary differentiation:

- Inventions in the field of 'core-AI'
- AI-based specific applications
- Inventions created by AI

II. Patentable inventions

2. Inventions in 'core-AI'

UNIVERSITY OF MANNHEIM
Department of Law

Core-AI = the AI as such, i.e. the mechanism of machine learning or the artificial neural network

Art. 52 (2): **mathematical methods**, schemes, rules and methods for performing mental acts etc. as well as **programs for computers** are **not** regarded as inventions.
→ if claimed **as such** in the application

Problem: Technical character

- EPO: Technical character is given, if the claim involves the use of a technical system (Decision 0003/08 of 12.5.2010 – Computerprogramme)
- possible approach: Identifying the technical character of the **training data** for the AI

→ *Do we want a general patentability of software/AI-related software?*

II. Patentable inventions

2. Inventions in 'core-AI'

UNIVERSITY OF MANNHEIM
Department of Law

Problem: Sufficiency of disclosure

- the application must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a skilled person
- challenge regarding AI: it may not always be understandable how the AI trains itself or at least very difficult to understand

- EPO: Disclosure of the structure and function of AI-based inventions depends on the subject-matter claimed and can include:
  - ➢ complete underlying algorithms
  - ➢ corresponding training schemes

→ *Do we need to adapt the preconditions for disclosure even more?*

II. Patentable inventions

3. AI-based specific applications

UNIVERSITY OF MANNHEIM
Department of Law

= combined software/hardware systems

- see new EPO Guidelines for Examination: Part G Chapter II-1 3.3.1 "Artificial intelligence and machine learning":

  "Artificial intelligence and machine learning find applications in various fields of technology. For example, the use of a neural network in a heart- monitoring apparatus for the purpose of identifying irregular heartbeats makes a technical contribution. The classification of digital images, videos, audio or speech signals based on low-level features (e.g. edges or pixel attributes for images) are further typical technical applications of classification algorithms."

- Here, the common concepts for the examination of **computer-implemented inventions** apply

→ *Is AI more than a computer tool?*

II. Patentable inventions

4. Inventions created by AI

= the product resulting from the AI-supported invention process

- an invention must be novel, and non obvious for the skilled person over the prior art (Art. 52, 54, 56 EPC)

Problem: *Is the use of AI in the inventive process obvious?*

III. Who is the inventor/owner?

UNIVERSITY OF MANNHEIM
Department of Law

Who?

- the programmer
- the trainer
- the 'owner' of the data
- the system owner
- the AI itself (e-person?)

Which rights?

- the **right to the European patent**, Art. 60 EPC
  - concerning the AI
  - concerning the AI-based application
  - concerning the product of the AI-supported invention process
- the **right to be mentioned,** Art. 62 EPC
- the **European patent**

III. Who is the inventor/owner?

UNIVERSITY OF MANNHEIM
Department of Law

Who should acquire which rights?

- the programmer → co-inventor (right to the EP; mention)
- the trainer → co-inventor (right to the EP; mention)
- the 'owner' of the data → ???
- the system owner → EP if defined in investment terms
- the AI itself (e-person?) → ???
  - ➔ AI is not advanced enough to execute all steps of the inventive process, does not ask the questions
  - ➔ only a powerful technical tool
  - ➔ but: anticipating future developments?

IV. Conclusion

UNIVERSITY OF MANNHEIM
Department of Law

- present forms of AI do not require a major overhaul of the existing patent system
- room for minor adjustments
- it is worth to consider modifying the notions of inventorship and ownership with respect to the people involved in AI-inventions in order create incentives
- to create an e-person is not necessary from the perspective of patent law because AI is just supporting the inventive process
- a general patentability of AI must be regarded with care because it could reinforce existing monopolies of a few major tech companies with the necessary R&D capacities