

Criteria

First I set out some criteria to be met by any change to the law regarding inventions devised by AI systems:

- Provide a commercial incentive for innovation
- Provide a commercial incentive for knowledge sharing
- Provide legal certainty
- Be future proof
- Ensure that humans remain accountable for AI systems

Second I consider two types of inventions: (i) solutions found by AI systems and; (ii) search inventions whether devised by humans or devised by AI systems.

Option 0: Make no legal change

This option fails to meet the first four criteria and so is not optimal.

At present patent protection is not available for inventions devised by AI systems alone so that there is no commercial incentive through patents for innovation or knowledge sharing. There is also lack of legal certainty in cases where an invention is devised by a team including humans and an AI system. This option is not future proof since AI systems are advancing and becoming better able to find new solutions to problems.

Option 1: “Inventor” expanded to include humans responsible for an AI system which devises inventions

This option enables patent protection for inventions devised by AI systems alone so that there is some commercial incentive through patents for innovation and knowledge sharing.

However, type (ii) inventions are often protected using trade secrets since patent protection is often unavailable due to excluded matter.

This option is weak regarding providing legal certainty because it is difficult to know which humans are responsible for an AI system.

This option is possibly weak regarding being future proof because as AI systems advance there could be more difficulty to establish which humans are responsible for an AI system.

This option ensures that humans remain accountable for AI systems since there is no machine inventor.

The proposal from the DABUS team whereby the owner of the AI system becomes the owner of the invention devised by the AI system has more legal certainty (because establishing an owner is something done successfully in other fields such as motor vehicles) but still fails to give enough incentive for knowledge sharing of type (ii) inventions.

Option 2: Allow patent applications to identify AI as inventor



This option fails to ensure that humans remain accountable for AI systems because it gives status and rights to a machine.

Option 3: Protect AI-devised inventions through a new type of protection

I have considered this option from the point of view of two types of inventions devised by AI systems: (i) solutions and; (ii) search inventions. Examples of type (i) are the inventions claimed in the DABUS patent applications, the example given in the Siemens response to the WIPO conversation on AI and IP, the folded proteins predicted by AlphaFold. Examples of type (ii) are the AlphaFold algorithm to predict protein folding; and the algorithm which generated the inventions in the DABUS patent applications (in the case these are all devised by AI systems).

It may be that the importance of providing a commercial incentive for knowledge sharing is less for type (i) inventions than for type (ii) inventions. Since in the case of type (ii) inventions humans need to understand the technology in order to retain control as explained in the recent Reith lectures. The world is on a journey to create artificial general intelligence and needs to plan ahead for that.

In the case of type (i) inventions these are usually disclosed when they are commercialised such as through sale of a drug having the folded protein, use of the packaging with the fractal pattern etc.

Therefore I suggest considering a new type of protection for type (i) inventions which is a weaker form of protection than patents. Doing this might shift the balance between patents and trade secrets in the case of type (ii) inventions. Currently the balance is in favour of trade secrets for type (ii) inventions.

For type (ii) inventions the highest levels of commercial incentive (i.e. patents) need to be provided to facilitate knowledge sharing so that it is possible for society to prepare for artificial general intelligence.

A disadvantage of having different types of protection for type (i) and type (ii) is that legal certainty is reduced where it is debatable which type of invention is involved.

Another disadvantage is lack of future proofness since as technology moves on it is possible that the line between type (i) and type (ii) blurs.

Summary

In summary, none of the options are ideal although change is needed.

