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Request for Comments on Patenting Artificial Intelligence Inventions

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General Comment

0. Definitions

Machine Learning (ML) vs AI

ML

Machine learning is the study of computer algorithms that allow computer programs to automatically improve through experience - Tom Mitchell

Thus a machine learning program is one that automatically improves through experience.

AI

Computer science defines AI research as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. - Wikipedia

It is crucial to distinguish these two. AI has *agency* whereas ML does not. Repeated linear regression in the face of new data is ML. It is not AI.

All AI is ML, not all ML is AI.

1. Inventions that utilize AI, ... What are elements of an AI invention? For example:

>> The problem to be addressed (e.g., application of AI);

No. This is not an element of invention.

>> the structure of the database on which the AI will be trained and will act;

No. This is not an element of invention.

>> the training of the algorithm on the data;

No. This is not an element of invention.

>> the algorithm itself;

Yes. This is an element of invention, however should not be patentable. It is pure math.

>> the results of the AI invention through an automated process;

If an AI produces a novel result this is an invention of the AI.

If you develop an AI which then you use to produce a novel result this is two steps.

Any invention by an AI is by definition an automated process.

>> the policies/weights to be applied to the data that affects the outcome of
>> the results;

No. This is not an element of invention.

2. What are the different ways that a natural person can contribute to conception of an AI invention ...? For example:

>> Designing the algorithm and/or weighting adaptations;

This is a method of contribution.

>> structuring the data on which the algorithm runs;

This is not a method of contribution.

>> running the AI algorithm on the data and obtaining the results.

This is not a method of contribution. The AI is the inventor in this case.

The proper analogy is one of Lab -> Scientist.

If a lab supplies a scientist with materials are they listed as an inventor?

Only by prior contractual arrangement, not by default.

3. Do current patent laws and regulations regarding inventorship need to be revised ... ?

Yes.

4. Should an entity or entities other than a natural person ... be able to own a patent on the AI invention?

If an AI is a tool: Yes.

If an AI is deemed to have person-hood: No. Without prior consent.

If an AI is a legal slave: Yes.

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

Yes. The abilities of an AI are realized in the configuration of their weight matrices (in neural network based AIs). Both the weights and network architectures can be minutely altered without impacting the performance of the network.

Thus the question will arise, "How close do two network architectures and set of weights have to be to be considered the same network."

The proper test here is the forgery test. Was it the intent of one party to mimic the other and *deceive* a third party as to the origin / nature of the AI?

However while this will arise in the context of patents it is more properly an issue of Copyright.

6. Are there any disclosure-related considerations unique to AI inventions?

No. As stated above the primary invention is the algorithm (pure math) which is covered today.

7. How can patent applications for AI inventions best comply with the enablement requirement ...

Provide source code. This is well established and common practice. It is a norm and should be enforced.

8. ... Should assessment of the level of ordinary skill in the art reflect the capability possessed by AI?

AI (seen as a tool) can create solutions to problems for people below ordinary skill levels.

Should it be considered whether or not a citation for going 150mph is valid if the person was driving a Honda Civic vs a Bugatti Veyron? Yes.

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

There are several decades worth of published ideas which would have worked as well or better than modern systems had they been executed *faster* on hardware

such as GPUs.

Simply taking the existing ideas (intentionally or not) and executing them in a new computing environment does not constitute invention.

10. [New forms of intellectual property protections]

The EU has created a fair-use-like exemption for using publicly available data as part of training machine learning systems. This should be broadened and added to our system of protections.

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

At what point can an AI be said to have made a decision?

At what point can an AI be said to have demonstrated independent agency?

If an AI is independently making decisions at what point does it rise to the level of personhood?