

To: AIPartnership@uspto.gov

**Regarding:** Request for comments in the Federal Register on August 27, 2019, seeking public comment on the subject of patenting artificial intelligence (AI) inventions.

**Disclaimer:** I express my personal opinion and I do not represent the institution where I work.

**In summary:** I do not see any good reason to designate an artificial intelligence (AI) as an inventor and there are real people behind it who have to be considered for inventive contributions.

**Explanation:** Assigning inventors in a patent system is analogous to assigning authors in science.

### **How Science Gives Authorship Credit**

Two example scenarios to demonstrate how authorship is decided:

E1. If one person has an idea and if he does the work alone, obviously he would be the only author of a publication – example, publishing a hypothesis that appeared while one was alone and after that he wrote and solved some equations to support it.

E2. If one person has an idea and contacts a second and third person. The second person has to creatively produce a new sample, he has to work without guaranteed success. The third person has to analyze the sample by some apparently routine methods, but he has to observe carefully and to be creative. Some small feature on a spectrum could be statistical fluctuation of counts, or could be a clue for a hypothesis prompting to take more detailed spectra, expand range and so on. (Personal experiences with making samples a new way and analyzing spectra.)

Then the person who had the idea writes a scientific publication. Now, it is time to decide who is considered author(s) of the paper. Here, according to the scientific ethics and established tradition all 3 people are included on the list of authors. The used apparatus can be cited and the results have to be verifiable by others as much as possible. But the various apparatuses are not given credit. If AI was used, it could be

treated as apparatus. But if the AI had to be developed/adjusted for the specific non-standard research purpose, then the people who do this work are in an analogous role as the third person who analyzed the sample.

### **Who can be considered as inventor – “who” or “what”?**

Inventive development is like science. There is also no need to make an apparatus an inventor. Two example scenarios:

E1. Person **A** had an idea to apply Artificial Intelligence (**AI**) to some situation and to look for useful results. Next person **A** got results and by himself (no other potential inventors involved) thought over time about the results and came to a meaningful conclusion, which conclusion happened to be patentable subject matter. Person **A** wrote the patent application himself or worked with a patent professional.

The **AI** was commercially available, was purchased by person **A** (or by his institution), and no additional work was needed to adjust the **AI** for the specific task.

In this case Person **A** is the only inventor and the **AI** is cited as a tool.

E2. Person **A** had the idea again. But this time there was no commercially available **AI** ready to use for the specific idea. Person **A** went to a group of **AI-people B1, B2... Bn (Team-B)** and they made from scratch or adjusted existing **AI** for the specific idea of **A**. Person **A** gave some money to **B-team**, but team **B** had to work with deep understanding carefully, diligently (so person **A** could have reliable results) and creatively. They deserve inventive credit too.

In this case **Person A** is the first inventor, **people B1, B2... Bn are also inventors** (collaborators), the **AI** could not have a name to be cited, but something can be explained in the text that some **AI** is involved.

If a name is given to the **AI** and this name is used as a name of a second inventor, this would mean “**Team-B**” – **the name of the AI becomes a synonym for “Team-B”**, which further means a list of the names of **people B1, B2... Bn**. If n=50, it could be not convenient to have 50 names, then what to do? – To take 5 names at random, to use the names of the boss and whoever he chooses, or to give a name of

the team and to put the name of the team in the list of inventors? This has to be decided. This is really the problem that we have to work on now. If we have to designate either name of the team or name of the **AI** as an inventor, in both cases it is the people behind who are the inventors.

Designating **name or a team** as an inventor **has association with the real people** and oppositely, designating name of **AI** as an inventor **disassociates** and belittles the people. This is my point.

**Conclusion:** As demonstrated above, **AI** is not really an inventor, there are real people behind it ("**natural persons**" concept), even if they are too many to list all of them. People decide to apply for patent, people explain meaning of the work done, people (or institution of people) negotiate to sell the patent, and people (or institution of people) gets the money from selling the patent.

Pavel Ivanov, Ph.D. in physics,  
Patent examiner in USPTO TC 2800  
(571)272-3657  
pavel.ivanov@uspto.gov