

A STUDY ON THE EXAMINATION STANDARDS FOR ARTIFICIAL INTELLIGENCE INVENTION PATENTS

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ABSTRACT

The examination standards and practical standards for artificial intelligence invention patents are becoming increasingly less effective; The novelty standard involves the retrieval problem of "existing technology" in the field, as well as the impact of logical structures and algorithms; The creativity standard is the main examination standard for artificial intelligence invention patents.

Keywords: Practicality Standard; Novelty Standard; Creativity Standard

The examination standards for artificial intelligence invention patents are currently a hot research topic, and the author discusses them from the perspectives of practicality, novelty, and creativity.

1. Practicality Standard

The criteria for judging the practicality of an invention mainly include three aspects: "being able to be manufactured or used in the industry", "being able to produce positive effects", and "having reproducibility". The obstacle encountered by artificial intelligence invention patents in practicality standards is that the technical solution may lack detailed explanations or other background information, making it difficult for technical personnel in the corresponding field to repeatedly implement the technical solution recorded in the patent application disclosure content, and thus unable to produce the same technical effect. The Chinese Patent Examination Guidelines clearly state that meeting practical requirements requires implementability, reproducibility, and the ability to produce beneficial effects. This is because the reward object of the patent system is not the research and development activity itself, but the successful results it produces. Practicality, as understood in US patent law, is a specific, essential, and credible standard of practicality. In fact, the requirement of "practicality" is playing a smaller and smaller role in determining the patentability of an invention. In recent years, US courts have mainly weakened statutory testing standards by reducing practical requirements, thereby expanding the scope of patentable objects. As long as the inventor provides a specific application for their invention, and the application does not involve incredible scientific principles or obvious unrealistic assumptions, it may meet the current utility requirements. [1] For artificial intelligence technology, the natural laws behind its achievements are not obvious, often difficult for ordinary people to understand and uncertain, and therefore, the technical content of patent applications cannot be fully explained. Therefore, when conducting a practical examination of artificial intelligence related invention patent applications, the patent examination department cannot simply consider them as lacking clear technical background information and judge them as non reproducible. The Chinese Patent Examination Guidelines point out that "for the sake of clarity, if necessary, applicants can use commonly used markup language to briefly extract certain key computer source programs for reference, but do not need to submit all computer source programs." [2] For artificial intelligence related patent applicants, when writing patent applications, they should try to delve into technical details as

much as possible, Strengthen the description of specific application scenarios and implementation examples, while ensuring the overall layout of the claims is detailed, concise, and focused.

2. Novelty Standard

The novelty of an invention refers to the fact that it does not belong to prior art and does not conflict with the application. The key to examining the novelty of artificial intelligence invention patents lies in the judgment of "existing technology". The main issues regarding the novelty judgment criteria for artificial intelligence invention patent applications are as follows:

One is the retrieval problem of "existing technology" in the field.

Artificial intelligence technology involves a wide range of fields, and when generating claims, it is not based on the background information of artificial intelligence technology related to the inventor's innovation process that can be found in the past, but is completed by artificial intelligence relying on its own database, etc. Therefore, when using conventional ordinary search engines to search for "existing technology" in artificial intelligence related invention patent applications, obstacles may be encountered. This may arise from the process of patent examiners judging the novelty of an artificial intelligence related invention patent application, or from the process of patent applicants applying for a new invention related to artificial intelligence. However, network search engines will continue to improve over time, and the degree of information sharing and computer indexing functions will gradually improve and strengthen. It is also expected to solve this technical obstacle in the future

The second issue is the impact of logical structure and algorithms.

The novelty of invention patents containing artificial intelligence technology depends on the logical structure and algorithm. If artificial intelligence algorithms result in a lack of diversity in output or rely on their own similar data sets, there is a possibility that novelty cannot be satisfied. Inventions described in computer-generated text are most likely the result of minor modifications to existing invention patents. Therefore, it is unlikely that replacing synonym groups alone will make improved invention applications more novel than basic patents, so if there are a limited number of confirmed or predictable solutions or outcomes in the end, technicians will be more inclined towards known solutions. However, if some antonym

description components are embedded in the technical solution, or random models or other diversity methods are introduced into the algorithm, it will be easier to generate some differential expressions to enhance the novelty of the new invention. At the same time, applicants can utilize the powerful search function of computer networks to fully search and analyze existing invention achievements in their field, in order to ensure the novelty of patent applications.

The third issue is to maintain the novelty and level of innovation of artificial intelligence invention patents.

At present, artificial intelligence technology is developing rapidly, and the examination cycle for invention patent applications is basically around 2 years. The contradiction between the rapid development of technology and the long examination cycle will also affect the novelty judgment of artificial intelligence related inventions when applying for patents. China is currently improving its review procedures. The Chinese Patent Priority Examination Management Measures, which came into effect on August 1, 2017, propose that patent applications involving cutting-edge hot topics such as the Internet, big data, and cloud computing that are thriving in the new generation of technological revolution, with fast technological updates and short product life cycles, can be given priority examination. Shortening the examination cycle of artificial intelligence related invention patents will help artificial intelligence related patent applications maintain certain advantages in novelty examination.

3. Creativity Standard

The creativity of an invention refers to its prominent substantive features and significant progress compared to existing technology. The issue of creativity is the core issue in patent examination standards and will also have a substantial impact on the prospects of artificial intelligence invention patents. When we contemplate creativity, the images of Beethoven, Joyce, and Monet often come to mind, not the machines. [3] For a long time, the source of inventive creativity has been assumed to be human intellectual activities, but the advent of the artificial intelligence era has posed a challenge to this. Therefore, whether the creativity standard is met becomes the key to whether artificial intelligence related achievements can obtain patent authorization. In the practice of patent examination in China, the creativity

standard is the main examination standard for artificial intelligence invention patents. Among over a hundred patent review decisions related to artificial intelligence made by the Chinese Patent Reexamination Board, over 80% involve Article 22 (3) of China's Patent Law, which refers to the creativity of inventions.

Whether an invention possesses creativity should be evaluated based on the knowledge and abilities of technical personnel in the field of technology to which it belongs. The first step in evaluating creativity is to identify the "technical personnel in the technical field" in the concept setting. The purpose of setting this concept is to unify review standards and try to avoid the influence of subjective factors by reviewers. Admittedly, 'technical personnel in the field of technology' are humans rather than machines, but in the creative examination of artificial intelligence invention patents, this subject needs to be re examined or even redefined. Technical standards must keep pace with practical conditions. If the development of the technical personnel review standards is slow and cannot reflect their general level of technical knowledge, it will lead to a low threshold for patentability. This inspection standard needs to take into account the fact that the level of technical personnel has been strengthened by machines. [4] Given the rational, efficient, and creative nature of artificial intelligence itself, the author believes that, The evaluation criteria for technical personnel in their respective fields should be appropriately higher than those in other technical fields. As technical personnel in the field of object detection methods for implementing artificial intelligence computer systems, they should consider software developers with university or college education and years of professional experience in the field of artificial intelligence. Some scholars believe that "there is no doubt that if the restrictions on creativity are raised due to the participation of artificial intelligence in invention patents, it is likely to have a negative impact on inventors who are not familiar with using artificial intelligence methods." [5] In other words, the "technical personnel in this field" standard determined in the creative examination of artificial intelligence invention patent applications can only be "specialized and exclusive", It cannot be widely applied in the examination of invention patents in other fields to avoid inappropriately raising requirements for other applicants.

The second step in evaluating creativity is to determine whether the invention has prominent "substantive features". On the basis of determining the standards for technical personnel in the field, it is determined that the invention is not obvious compared to the existing technology. In this regard, the Japanese Concession Agency distinguishes between technical features within a

numerical range, or selects preferred materials from well-known materials. The creative judgment in situations such as the selection of commonly used technical means also provides principled judgment criteria: The selection of well-known materials, optimization of numerical ranges, substitution of equivalents, and selection of conventional technical means to solve specific technical problems are the common creative abilities of those skilled in the art. When distinguishing technical features solely based on these features, if no other evidence of creativity can be derived, such inventions are usually considered easy for those skilled in the art to contemplate. In the patent reexamination case [6] of "A Mobile Robot with Five Degrees of Freedom", the reexamination applicant proposed three distinctive technical features of their stated claims relative to the comparative documents. However, the Patent Reexamination Board believes that robots have a platform and can move freely, which is well-known in this field. When it is necessary for robots to move freely, technicians in this field may easily think of setting up a mobile platform on the robot to allow it to move freely (distinguishing technical feature 1). In addition, for distinguishing technical feature 2 and distinguishing technical feature 3, it can be seen from the "surgeon console" disclosed in the comparative document, which has functions such as lighting, amplification, depth perception, and enhanced digital images, that there must be a monitor on the surgeon console for monitoring the operation of the robotic hand. For better communication between patients and doctors, it is also easy to think of installing a monitor on the side of the robotic hand. Therefore, this technical solution is obvious compared to the existing technology and does not have creativity. In this case, the technical personnel in the field of artificial intelligence are "surgeons", and the identification criteria for "surgeons" combine the "rational" characteristics of artificial intelligence itself, which can naturally generate the idea of installing medical tools based on better treatment needs. Therefore, this technical feature is "obvious" and does not possess creativity.

The third step in evaluating creativity is to determine the "significant advancement" of the invention, which means that the invention can produce beneficial technical effects compared to existing technology. At the same time, it is also necessary to consider the current situation of artificial intelligence technology data structures in this field, and there is no need to require existing technology to provide clear guidance on using the invention to generate the same data structure, in order to determine that it has effective effects. For example, in the review of "a concrete mix design method based on artificial intelligence", the substantive examination department of the China National Intellectual Property Administration believed that the

applicant's content aimed at improving the learning rate and reducing the adjustment error of each layer based on the calculation of neuron attributes had been disclosed in the comparison document, thus lacking creativity. The Patent Reexamination Board believes that although both the claims and the comparison documents use artificial neural network models, the relationships established in the models are different, and the technical solutions recorded in the claims use genetic algorithms to design and optimize the concrete mix ratio that meets all performance requirements and has the lowest cost, thereby greatly reducing the number of trial mixes, saving manpower, materials, and energy, saving time, and accelerating construction progress. Therefore, compared to existing technologies, it has beneficial technical effects and possesses creativity. Therefore, when evaluating whether artificial intelligence achievements can produce more beneficial technical effects than existing technologies, it is necessary to start from the overall technical solution and comprehensively consider the level of technological development in the field where artificial intelligence achievements are located. In addition, some scholars have proposed that through the examination approach of patent claims, a simple mathematical model can be developed that treats the features of patent claims as logical statements and patent claims as combinations of statements, where each statement is combined through logical relationships. The proposed mathematical model establishes an expert system for examining various legal issues and automatically evaluates a large number of patent claim variables, which is not achievable today. But it is worth affirming that if mathematical methods can be used to analyze patent claims, it will be helpful for the work of the patent examination department, and at the same time, it can assist in formulating patent examination policies based on mathematical models and computerized expert systems.

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- [7] See No. 54952 of the Re-examination Decision of the Patent Re-examination Board of the China National Intellectual Property Administration.