
Praxis



PTO Practice

Jon Bockman and Jeff Young

USPTO Guidance: Artificial Intelligence Inventions That Solve a Technical Problem Eligible for Patenting

The U.S. Patent and Trademark Office (USPTO) has issued guidance regarding patent eligibility with respect to patenting artificial intelligence (AI) inventions.¹ The newly issued guidance from the USPTO provides a relatively clear path to patent eligibility for patent applications claiming inventions that use AI, so long as the claims reflect a solution to a technical problem identified in the application.

Patent applications directed to processes, machines, manufactures, and compositions of matter are generally patent-eligible. The Supreme Court, however, has stated that certain patent claims, including certain software patent claims, are directed to an “abstract idea” and are unpatentable. *See Bilski v. Kappos*, 561 U.S. 593 (2010); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012); *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208 (2014).

The guidance provides a path for crafting claims that the USPTO has deemed are patent-eligible. This

guidance includes three new example cases, Examples 47–49, which include both eligible and ineligible claims as a blueprint for applicants and practitioners to craft patent-eligible AI claims.

Below is an overview of the practical implications of the USPTO’s eligibility guidance, followed by key takeaways from each of Examples 47–49.²

Practical Implications of the USPTO Guidance

- **Considering the new guidance, applicants claiming AI inventions should: (1) describe at least one technical issue solved by their invention in the specification, (2) ensure there is sufficient technical description of how to implement at least one solution to the technical issue in the specification to teach someone of skill in the relevant art how to make and use the invention, and (3) recite the solution(s) in the claims.**
 - One option for reciting a technical solution in the claims is to recite a particular downstream use of an AI-model output. The downstream use should reflect a solution to the technical issue described

in the specification. *See* Examples 47–49.

- Another option is to recite a method for training an AI model that enables it to perform a respective task (*e.g.*, facial recognition) more effectively. *See* Example 39 of the 2019 Revised Patent Subject Matter Eligibility Guidance.
- When practical, applicants should avoid recitation of specific mathematical functions in the claims. Including such limitations in the claim presents risk of potentially valuable limitations being interpreted as falling into the mathematical processes grouping of abstract ideas.
- Practitioners should push back on Examiner’s asserting that additional elements are well understood, routine, and conventional at Step 2A, Prong 2 of the USPTO’s eligibility framework. As demonstrated in Example 49, treatments known in the art can serve as a practical application of an abstract idea.

Patent-Eligibility Examples 47–49

Example 47

Example 47 applies the patent-eligibility framework to three claims related to artificial neural networks (ANNs).

Key Takeaways from Claim 1

- Claim 1: Eligible. Applicants claiming hardware inventions, such as the exemplary circuit design recited in claim 1 for implementing a machine-learning model, are generally safe from eligibility rejections.

Key Takeaways from Claim 2

- Claim 2: Ineligible. Claim 2 of Example 47 is ineligible because it fails to recite any limitations that reflect an improvement to a technology. The trained ANN recited was known in the art and is implemented on a conventional computer. The method steps are recited at a high level of generality, **without reciting any limitations indicating that the invention provides an improvement over the state of the art** described in the background of the example. As demonstrated below with respect to claim 3, had the applicant recited a specific application for the output of the trained ANN, in particular, **an application that reflects a solution to a technical issue described in the background of Example 47**, the claim likely would have been found patent-eligible.

Key Takeaways from Claim 3

- Claim 3: Eligible. Claim 3 of Example 47 satisfies the patent-eligibility criteria by reciting a particular downstream application of an output generated by a machine-learning model. The downstream application was recited such that it reflected a solution to a technical problem with network security described in the background of Example 47. **Applicants for patents directed to inventions not tied to an improvement in the AI model(s) themselves, but rather to how the models are used to improve another technology, should ensure that their claims adequately recite a technological improvement to that technology.**

Example 48

Example 48 illustrates the application of the eligibility analysis to claims that recite AI-based methods of analyzing speech signals and separating desired speech from extraneous or background speech.

Key Takeaways from Claim 1

- Claim 1: Ineligible. Claim 1 of Example 48 is ineligible because it fails to recite details related to how the recited deep neural network (DNN) solves a technical problem. Here, as made clear in the background description to Example 48 provided in the guidance, **the invention lies in how the embeddings are partitioned into clusters and how the reconstructed mixed speech signal is determined based on the clusters. This improvement is not recited in claim 1**; thus, claim 1 fails to satisfy the key requirement for reciting a practical application at Step 2A, Prong 2. Step 2B provides an additional path to eligibility where the claim recites additional elements that are not well-understood, conventional, and/or routine; however, that is not the case here.

Key Takeaways from Claim 2

- Claim 2: Eligible. Claim 2 of Example 48 is patent-eligible because it recites a downstream application of the machine-learning model's output. The background to **Example 48 describes the problem to be solved as enabling separation of speech from different sources in the same class without prior knowledge of the number of speakers or speaker-specific training.** As noted in the guidance,

“The claimed invention reflects this technical improvement by including these features [in steps (f) and (g) of claim 2].” Claim 2 recites synthesis of embedding vectors that were generated and clustered by the DNN into separate speech waveforms in the time domain and converted into a mixed speech signal, excluding audio from the undesired source.

Key Takeaways from Claim 3

- Claim 3: Eligible. Claim 3 of Example 48 continues the pattern of reciting downstream applications of AI-model outputs to render a claim patent-eligible. The background to Example 48 described how this invention offers an improvement over existing speech-separation methods by providing a speech-separation technique that enables transcription of speech from individual sources included in a mixed speech signal. Claim 3 reflects the technical improvements discussed in the background of Example 48 by reciting how the source-specific clusters of DNN-generated embeddings enable transcription **of each separated speech signal individually.**

Example 49

Example 49 provides an analysis of method claims reciting an AI model that is designed to assist in personalizing medical treatment to the individual characteristics of a particular patient.

Key Takeaways from Claim 1

- Claim 1: Ineligible. In Example 49, central to the invention

was how the PRS score was indicative of a particular condition that could be treated using a particular medication (Compound X eye drops). The claim fails to recite any link between the PRS score and the applied treatment. Instead, the claim merely recites administering *an appropriate* treatment. Thus, the claim fails to capture how the output of the AI model is applied to reflect an improvement to a method of treatment.

treatment (Compound X eye drops) that is applied based on the AI-generated PRS score, thus reflecting the technical improvement provided through the use of the AI model. Notably, Compound X eye drops were known in the art. However, consideration of whether additional elements (claim elements not reciting an abstract idea) are routine, conventional, and well understood is *expressly excluded* from the eligibility inquiry at Step 2A, Prong 2. See MPEP 2106.04(d).

patent portfolios and handling disputes before the US Patent and Trademark Office (USPTO). Additionally, Jon provides strategic guidance to clients on establishing patent departments and committees. He is frequently called upon to lead due diligence projects for high-value mergers and acquisitions.

Jeff Young is an associate in MoFo's Patent Strategy and Prosecution practice. He has experience in various technology areas, including machine learning, medical devices, autonomous vehicles, and more. In addition to patent prosecution, Jeff's practice also includes assisting clients with freedom to operate and patentability determinations.

Key Takeaways from Claim 2

- Claim 2: Eligible. Claim 2 of Example 49 recites a particular

Jon Bockman heads MoFo's Technology Patent Practice and the firm's Advanced Materials Group. He is a trusted advisor for both large and emerging companies, managing their global

1. An overview of the eligibility test applied by the USPTO can be found at <https://www.uspto.gov/web/offices/pa/mpepl/s2106.html>.

2. A copy of Examples 47–49 can be found at <https://www.uspto.gov/sites/default/files/documents/2024-AI-SMEUpdateExamples47-49.pdf>.

Copyright © 2024 CCH Incorporated. All Rights Reserved.
Reprinted from *IP Litigator*, September/October 2024, Volume 30, Number 5, pages 34–36,
with permission from Wolters Kluwer, New York, NY,
1-800-638-8437, www.WoltersKluwerLR.com

