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Can AI Be Patented? Navigating Patent Subject Matter Eligibility

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Commentary

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[Editor's Note: John H. Mutchler is a partner at Robinson+Cole and a member of the Intellectual Property + Technology group. He focuses his practice on advising and litigating on behalf of clients to protect their intellectual property rights in patent and trademark, and copyright prosecution and litigation. Attorney Mutchler has a broad range of hands on technology and IP experience including the mechanical and electrical arts, metallurgy, power generation (e.g., nuclear power, fuel cells, fossil power and energy storage), carbon capture methods and compositions, nano technologies, polymer manufacturing, rotating equipment and medical devices. Attorney Mutchler holds a Masters of Science Degree in Metallurgy, a Masters of Science Degree in Engineering Management and a Bachelors of Science Degree in Mechanical Engineering, in addition to his Juris Doctorate degree and his status of a Professional Engineer (PE) registered in the State of Connecticut. Any commentary or opinions do not reflect the opinions of Robinson+Cole or LexisNexis® Mealey Publications™. *Responses are welcome.]*

Abstract
Courts have held that an invention may not be eligible for patent protection if the subject is an abstract idea. Additional analysis is necessary to determine if the subject includes elements that meet the standards of judicial exceptions. The field of Artificial Intelligence (AI) related inventions is expanding rapidly and is of great interest to research universities' technology transfer offices and industry. This paper presents examples of AI related patents and patent applications, highlights a portion of a patent prosecution and a summarizes a recent U.S. Federal Court decision. Suggestions that inventors and patent drafters can implement to improve their patent applications to increase the probability of meeting the threshold requirements for patent subject matter eligibility for AI related inventions are also provided.

Survey Of Patent Applications And Granted Patents Related To Artificial Intelligence (AI)

A survey of public databases indicates that there are a plethora of U.S. patent applications and granted patents that have the term "artificial intelligence" in any of the claims. For example, one search uncovered about 10,000 patent applications and about 12,000 granted patents that include the term "artificial intelligence" in any of the claims. There are several leaders contributing to the numbers of such patents and applications, including IBM (about 900), Samsung (about 800), Microsoft (about 500), LG Electronics (about 400) and Bank of America (about 400).

Before delving into examples of claims, it is important to understand the structure of a patent. A patent has several parts, including a specification, drawings, and patent claims. The patent claims set the metes and bounds of the invention and define the scope of what the applicant can exclude others from making, using, or selling. Thus, the claims are used to determine third party patent infringement.

Examples of some claim language incorporating artificial intelligence are summarized in Table 1.

Table 1.

Applicant and Patent or Application Number	Claim language
IBM 18,779,459[1]	An **artificial intelligence** infrastructure, comprising: a first **artificial intelligence** based topology that is configured to collect a person's personal data and generates from the personal data a plurality of personal topology elements; and a second **artificial intelligence** based topology that is configured to include at least a first of the plurality of personal topology elements to service an overall **artificial intelligence** generation objective.
Boeing U.S. 11,597,519[2]	A passenger assistant system comprising: an **artificial intelligence** processing unit configured for one or both of machine learning or being trained based on received information; a sensor interface coupling the **artificial intelligence** processing unit with at least one sensor configured to provide environmental information regarding a cabin of an aircraft; a flight crew interface coupling the **artificial intelligence** processing unit with at least one flight crew input; a passenger interface coupling the **artificial intelligence** processing unit with at least one passenger input; and at least one end effector coupled to the **artificial intelligence** processing unit; wherein the **artificial intelligence** processing unit is configured to direct the at least one end effector to perform at least one task responsive to information acquired from one or more of the sensor interface, flight crew interface, or passenger interface, wherein the at least one task comprises a localized task tailored for a portion of the cabin.
ABB U.S. 12,013,690[3]	A method of controlling a process with a distributed control system (DCS) of a process plant, wherein the DCS is configured to operate in at least a control room in the process plant, for controlling a plurality of plant parameters associated with at least one process, . . . obtaining the recommended one or more control operations to be performed to control the at least one process based on an **artificial intelligence (AI)** model; . . .
Porsche U.S. 12,249,157[4]	A method for detecting movements of a vehicle body of a first motor vehicle, the method comprising: recording image and sensor data by means of an image and sensor device of a second motor vehicle, . . . forwarding the image and sensor data to a data analysis device that comprises a detection system for detecting the lateral and vertical movements of the vehicle body of the first motor vehicle and the acoustic signals of the first motor vehicle, the detection system using **artificial intelligence** algorithms and machine image analysis

Subject Matter Eligibility Criteria In The United States

The USPTO Manual of Examining Procedure (MPEP) § 2106[5] sets forth the two-part criteria for determining subject matter eligibility (SME) of patent claims and includes two flow charts that illustrate the process. The two flow charts are reproduced in Chart 1 and Chart 2.

Chart 1

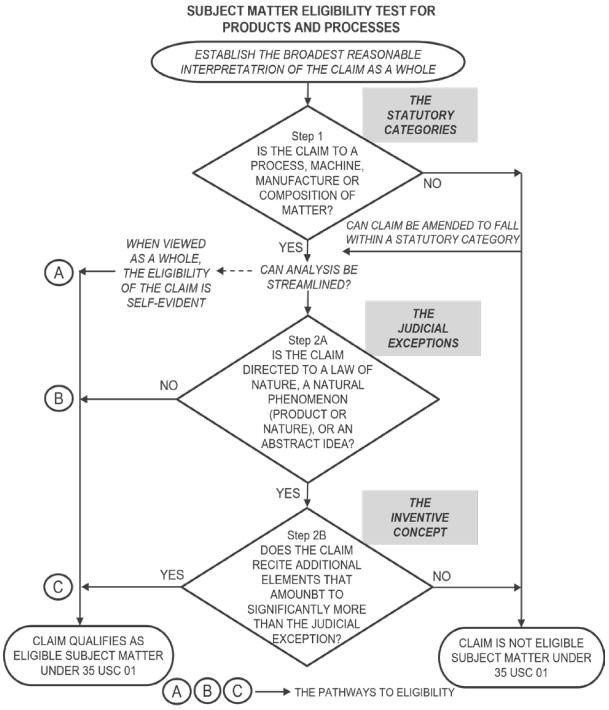
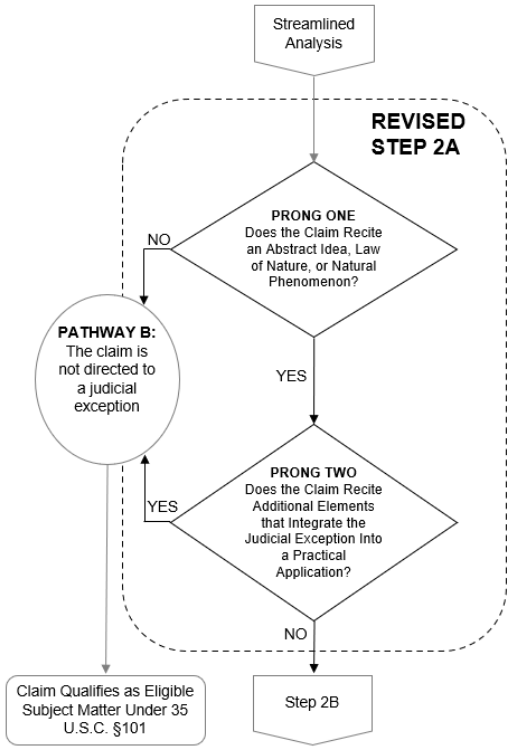


Chart 2



35 U.S.C. §101 sets forth the types of inventions that are patentable and in particular states, "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."[6] Step 1 of the SME test requires determining if the claim is directed to one of the four statutorily eligible categories, namely, a process (or method), a machine, an article of manufacture or a composition of matter. If the claim is not directed to one of the four categories, then the claim is not eligible subject matter under section 101.

If the claim is directed to one of the four categories, then further analysis pursuant to Step 2 (i.e., Step 2A and 2B) is required. Step 2A is a two prong (Prong One and Prong Two, see Chart 2) analysis. Prong One analyzes whether the claim is directed to a judicial exception, which are categories that the courts have determined may not be eligible under section 101. These judicial exceptions include laws of nature, natural phenomena (i.e., a product of nature) or an abstract idea. The courts consider a mental process (thinking) "that can be performed in the human mind, or by a human using a pen and paper, to be an abstract idea."[7] Mental processes are one grouping of abstract ideas and are defined as concepts performed in the human mind Mental processes include observations, evaluations, judgments, and opinions. Claims that have limitations that cannot be performed in the human mind, do not recite a mental process and thus are SME. If the claim does not recite any of the judicial exceptions, then the claim is SME via pathway B of the Charts 1 and 2.

Examples of claims **that do not recite mental processes** because they cannot be practically performed in the human mind include:

- a claim to a method for calculating an absolute position of a GPS receiver and an absolute time of reception of satellite signals, where the claimed GPS receiver calculated pseudo ranges that estimated the distance from the GPS receiver to a plurality of satellites[8];

- a claim to detecting suspicious activity by using network monitors and analyzing network packets[9];

- a claim to a specific data encryption method for computer communication involving a several-step manipulation of data[10]; and

- a claim to a method for rendering a halftone image of a digital image by comparing, pixel by pixel, the digital image against a blue noise mask, where the method required the manipulation of computer data structures (*e.g.,* the pixels of a digital image and a two-dimensional array known as a mask) and the output of a modified computer data structure (a halftoned digital image)[11].

In contrast, claims **do recite a mental process** when they contain limitations that can practically be performed in the human mind, including for example, observations, evaluations, judgments, and opinions. Examples of claims that recite mental processes include:

- a claim to "collecting information, analyzing it, and displaying certain results of the collection and analysis," where the data analysis steps are recited at a high level of generality such that they could practically be performed in the human mind[12];

- claims to "comparing BRCA sequences and determining the existence of alterations," where the claims cover any way of comparing BRCA sequences such that the comparison steps can practically be performed in the human mind[13]; and

- a claim to collecting and comparing known information, which are steps that can be practically performed in the human mind[14].

The SME of artificial intelligence related claims often hinges on whether they are abstract ideas. Thus, if the claim does recite a judicial exception, such as an abstract idea, then Prong Two of Step 2A must be analyzed. Prong Two involves an analysis of whether the claim integrates the judicial exception into a practical application and not merely well understood, routine and conventional activities. Examples of practical applications include improving the functioning of a computer or improving another technology or technical field. Many claims to inventions with artificial intelligence limitations in the claims are SME, as improvements to the functioning of a computer or improvements to another technology or technical field. Such inventions may provide a particular way to achieve a desired outcome when they claim, for example, a specific application of artificial intelligence to a particular technological field. Implementing an abstract idea in conjunction with a particular machine or manufacture that is integral to the claim, is another example of integrating the judicial exception into a practical application. A claim that includes an abstract idea and limitations that change the state of a particular product may be SME. If the claim does recite additional elements that integrate the judicial exception (e.g., an abstract idea) into a practical application, then the claim is SME via Pathway B in Charts 1 and 2.

However, if the claim does not recite additional elements that integrate the judicial exception (e.g., an abstract ideas) into a practical application, then additional analysis pursuant to Step 2B is required. Analysis under Step 2B includes consideration of whether the claim recites something more than elements that are well understood, routine and conventional in the particular industry. Examples of computer functions that the courts have recognized to be well-understood, routine and conventional include, "receiving or transmitting data over a network, (e.g., using the Internet to gather data);"[15] performing repetitive calculations;"[16] and storing and retrieving information in memory."[17] *See* MPEP §2106.05(d) II. Examples of claims that recite something more than elements that are well-understood, routine and conventional, include improvements to the functioning of a computer, improvements to any other technology or technical field and applying the judicial exception with, or by use of, a particular machine. If the claim does recite something more than elements that are well understood, routine and conventional, then the claim is SME under Pathway C. However, if the claim

does not recite something more than elements that are well understood, routine and conventional, then the claim is not SME and the analysis ends.

Example Of Application Of The Subject Matter Eligibility Criteria During Patent Prosecution

Of the 22,000 patent applications and granted patents surveyed, about 6,000 have had subject matter eligibility rejections under 35 U.S.C. §101.

ABB's U.S. patent 12,013,690[18] for a "Method And System For Controlling A Process In A Process Plant," included the following as-filed claim.

> 1. A method of controlling a process with a distributed control system (DCS) of a process plant, wherein the DCS is configured in at least a control room in the process plant, for controlling a plurality of plant parameters associated with at least one process, wherein the DCS is trained to monitor one or more control room operators and one or more actions performed by the one or more control room operators on the plurality of plant parameters, for providing recommendations and performing one or more control operations to control at least one process in the process plant, wherein the method is performed by the DCS, the method comprising: obtaining the recommended one or more control operations to be performed to control the at least one process; detecting availability of the one or more control room operators based on historical data related to the one or more actions performed by the one or more control room operators, one or more sensory parameters of the one or more control room operators and a status associated with the at least one process; providing one or more queries to the one or more control room operators upon detecting the availability of the one or more control room operators, wherein the one or more queries are related to at least one plant parameter from the plurality of plant parameters being at least one of, observed and modified by the one or more control room operators, the recommended control operations, and the status of the at least one process; and receiving one or more inputs from the one or more control room operators for validating the recommended one or more control operations, wherein the validated one or more control operations are used as training set for the DCS to control the at least one process.

On December 1, 2023, the USPTO Examiner issued a non-final Office Action in which all the claims were rejected "under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. The claims do not fall within at least one of the four categories of patent eligible subject matter because the claimed invention is directed to an abstract idea without significantly more."[19] The Examiner set forth the following rationale and application of the two-step process.

Step 2a - Judicial exception - abstract idea, without significantly more, namely, obtaining, validating, acquiring and/or prioritizing are merely mental processes.

Step 2b -This judicial exception is not integrated into a practical application as the claim limitations are directed to the generality of obtaining and validating recommended control actions, not particularly tied to a system and do not provide meaningful limitations to the method or system, but instead are merely a general link to the technology DCS, process plant, imaging, computing units and user interface, which are merely generic components.

ABB was able to overcome the SME rejection under 35 U.S.C. §101 by amending the claim with the following underlined limitations:

- obtaining the recommended control operations . . . to control the process <u>based on an artificial intelligence (AI) model</u> . . .

- <u>a training set for the DCS to control the process . . .training the AI model based on the training set</u> . . .

In the Notice of Allowance, the USPTO Examiner did not provide the rational for satisfying the two-part SME analysis.

Survey Of A Recent Federal Circuit Case Regarding SME

On April 18, 2025, the Federal Circuit issued their decision in *Recentive Analytics, Inc. v. Fox Corp.,* a case

that presented the question of patent subject matter eligibility of four of Recentive's patents (i.e., U.S. Patent Nos. 10,911,811 ("'811 patent"),[20] 10,958,957 ("'957 patent"),[21] 11,386,367 ("367 patent"),[22] and 11,537,960 ("'960 patent"))[23] directed to the use of machine learning for the generation of network maps and schedules for television broadcasts and live events.[24] The '367 patent and the '960 patent are directed to machine learning training and the '811 and '957 patents are directed to the network maps.[25] The machine learning training patents recite a method containing: (i) a collecting step (receiving event parameters and target features); (ii) an iterative training step for the machine learning model (identifying relationships within the data); (iii) an output step (generating an optimized schedule); and (iv) an updating step (detecting changes to the data inputs and iteratively generating new, further optimized schedules).[26] The network map patents recite a method containing: (i) a collecting step (receiving current broadcasting schedules); (ii) an analyzing step (creating a network map); (iii) an updating step (incorporating real-time changes to the data inputs); and (iv) a using step (determining program broadcasts using the optimized network map).[27]

In *Recentive*, the court applied the SME analysis discussed herein and in particular stated "[i]n the context of software patents (which includes machine learning patents), the step-one inquiry determines, "whether the claims focus on 'the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an abstract idea for which computers are invoked merely as a tool.'"[28] . In applying the analysis, the court observed that the claims of both sets of patents merely employed "generic machine learning technology in carrying out the claimed methods for generating event schedules and network maps" without any improvements to the computer.[29] In addition, the court stated that "the claimed methods are not rendered patent eligible by the fact that [using existing machine learning technology] they perform a task previously undertaken by humans with greater speed and efficiency than could previously be achieved."[30] The court then analyzed the claims pursuant to Step 2B, to "determine whether the claims include 'an element or combination of elements' that transforms the claims into something 'significantly more' than a claim on the patent-ineligible concept itself."[31] The court concluded that the claims failed to include any limitations that "would transform the Machine Learning Training and Network Map patents into something "significantly more" than the abstract idea of generating event schedules and network maps through the application of machine learning." *Id*. The Court held that Recentive's patents "do no more than claim the application of generic machine learning to new data environments, without disclosing improvements to the machine learning models to be applied, are patent ineligible under § 101."[32] However, the Court recognized that "[m]achine learning is a burgeoning and increasingly important field and may lead to patent-eligible improvements in technology.[33]

Conclusion

Application of the two-part SME test should be performed during the drafting of the patent application to ensure sufficient disclosure is included to render the as-filed claims as having SME or to be able to amend the claims to acquire SME during prosecution. The USPTO criteria for SME are quite complex and refers to many Federal court and PTAB cases. Therefore, patent practitioners and inventors should be aware of these criteria and adjust the application accordingly before filing the same. In view of *Recentive* it may be more difficult to achieve SME with claim limitations that include artificial intelligence or machine learning, without claiming an improvement in the functioning of the computer or improvements in the artificial intelligence or machine learning. Also, it is important to remember, that not only can artificial intelligence and machine learning be patented, including artificial intelligence in the claims can help during prosecution to satisfy the SME two-part test.

Endnotes

1. U.S. Patent Application No. 18/779,459 for Artificial Intelligence Based Topology With Topology Builder and Client Side Personalized Trusted Output, filed July 22, 2024.

2. Ibrahim, Yakentim M., Bittner, Daniel K., Artificially Intelligent Flight Crew System and Methods, U.S. Patent No. 11,597,519, filed June 6, 2018, issued Mar. 7, 2023.

3. Bhat, Shrikant, Method and System For Controlling A Process In A Process Plant, U.S. Patent No. 12,013,690, filed Dec. 12, 2026, issued Jun. 18, 2024.

4. Peters, Tannik, Stadelmayer, Matthias, Method, System and Computer Program Product for Detecting Movements of the Vehicle Body in the Case of a Motor Vehicle, filed Nov. 23, 2021, issued Mar. 11, 2025.

5. MPEP.USPTO.gov, https://mpep.uspto.gov/RDMS/MPEP/current#/current/d0e197244.html

6. 35 U.S.C. § 101.

7. *CyberSource Corp. v. Retail Decisions, Inc.,* 654 F.3d 1366, 1372, 99 USPQ2d 1690, 1695 (Fed. Cir. 2011).

8. *SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d, 1319 1331-33 (Fed. Cir. 2010), 94 USPQ2d, 1607,1616-17.

9. *SRI Int'l,* 930 F.3d, 1295,1304 (Fed. Cir. 2019).

10. *Synopsys, Inc. v. Mentor Graphics Corp.,* 839 F.3d 1138, 1148 (Fed. Cir. 2016), 120 U.S.P.Q.2d 1473, 1481 (distinguishing the claims in *TQP Dev., LLC v. Intuit Inc.*, No. 2:12–CV–180–WCB, 2014 WL 651935 (E.D. Tex. Feb. 19, 2014).

11. *Research Corp. Techs.,* 627 F.3d 858,868 (Fed. Cir. 2010), 97 U.S.P.Q.2d, 1274, 1280.

12. *Electric Power Group v. Alstom, S.A.,* 830 F.3d 1350, 1353-54, 119 USPQ2d 1739, 1741-42 (Fed. Cir. 2016).

13. *University of Utah Research Foundation v. Ambry Genetics,* 774 F.3d 755, 763, 113 USPQ2d 1241, 1246 (Fed. Cir. 2014).

14. *Classen Immunotherapies, Inc. v. Biogen IDEC,* 659 F.3d 1057, 1067 (Fed. Cir. 2011), 100 USPQ2d 1492, 1500

15. *Intellectual Ventures I LLC, v. Symantec Corp. & Trend Micro, Inc.*, 838 F.3d 1307, 1321 (Fed. Cir. 2016), 120 U.S.P.Q.2d, 1307,1362.

16. *Parker v. Flook*, 437 U.S. 584, 594, 198 U.S.P.Q.2d at 199.

17. *Versata Dev. Group, Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1334 (Fed. Cir. 2015), 115 U.S.P.Q.2d 1681, 1701.

18. Bhat, Shrikant, Method and System for Controlling a Process in a Process Plant, 12,013,690, filed Dec. 26, 2019, issued Jun. 18, 2024.

19. USPTO Patent Center prosecution history https://patentcenter.uspto.gov/applications/17418830/ifw/docs?application=

20. Tabrizi, Andysheh, Charles Smith, Evan, Systems and Methods for Automatically and Dynamically Generating a Network Map, 10,911,811, filed Oct. 10, 2019, issued Feb. 2, 2021.

21. Tabrizi, Andysheh, Charles Smith, Evan, Systems and Methods for Automatically and Dynamically Generating a Network Map, 10,958,957, filed Dec. 4, 2020, issued Mar. 23, 2021.

22. Tabrizi, Andysheh, Charles Smith, Evan, Systems and Methods for Automatically and Dynamically Generating a Network Map, 11,386,367, filed May 27, 2021, issued Jul. 12, 2022.

23. Tabrizi, Andysheh, Charles Smith, Evan, Systems and Methods for Automatically and Dynamically Generating a Network Map, 11,537,960, filed Jul. 5, 2022, issued Dec. 27, 2022.

24. *Recentive Analytics, Inc. v. Fox Corp.*, 134 F.4th 1205 (Fed. Cir. 2025).

25. *Id*. at 1208, 1209.

26. *Recentive, supra,* at 1209.

27. *Id*.

28. *Id*.

29. *Id*. at 1212.

30. *Id*. at 1214.

31. *Recentive Analytics, Inc. v. Fox Corp.*, 134 F.4th 1205, 1215 (Fed. Cir. 2025).

32. *Id*.

33. *Id.* ■

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