

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**DENTAL MONITORING SAS,**  
*Plaintiff-Appellant*

v.

**ALIGN TECHNOLOGY, INC.,**  
*Defendant-Appellee*

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2024-2270

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Appeal from the United States District Court for the Northern District of California in No. 3:22-cv-07335-WHA, Judge William H. Alsup.

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Decided: July 7, 2026

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MARK ANDREW PERRY, Weil, Gotshal & Manges LLP, Washington, DC, argued for plaintiff-appellant. Also represented by ADAM W. MITCHELL, CAROLINE VOELKER; ROCCO JOSEPH RECCE, New York, NY.

DAN L. BAGATELL, Perkins Coie LLP, Hanover, NH, argued for defendant-appellee. Also represented by KAITLIN DRYDEN, Madison, WI; JOHN H. GRAY, Phoenix, AZ; HARI SANTHANAM, Chicago, IL.

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Before LOURIE, SCHALL, and TARANTO, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Dental Monitoring SAS (“Dental Monitoring”) appeals from a final decision of the United States District Court for the Northern District of California granting summary judgment that claims 1 and 14 of U.S. Patent 11,049,248 (“the ’248 patent”) and claims 1, 7, and 12 of U.S. Patent 10,755,409 (“the ’409 patent”) are directed to ineligible subject matter under 35 U.S.C. § 101 and hence invalid. *Dental Monitoring SAS v. Align Tech., Inc.*, No. C 22-07335 WHA, 2024 WL 2261931 (N.D. Cal. May 16, 2024) (“*Decision*”); J.A. 18. For the following reasons, we *affirm*.

#### BACKGROUND

Dental Monitoring is the owner of the ’248 and ’409 patents, which relate to the field of dental arch image analysis. ’248 pat., col. 1 ll. 6–7; ’409 pat., col. 1 ll. 6–7. The ’248 patent is directed to a method for assessing the shape of an orthodontic aligner using a “deep learning device.” ’248 pat., Abstract. The ’409 patent is directed to a method for acquiring an image of a dental arch and analyzing it using a “deep learning device.” ’409 pat., Abstract. Orthodontic aligners are used to reposition a patient’s teeth via an iteration of several aligners that gradually move the teeth from a starting to final dentition. *Decision*, 2024 WL 2261931, at \*1. That process is typically done with periodic visual assessments by a dental practitioner to evaluate progress and determine whether to move to the next aligner. *Id.* A “deep learning device” is a machine learning device that, through training, can analyze images and recognize patterns within the images. ’248 pat., col. 16 ll. 46–48; ’409 pat., col. 16 ll. 53–55.

In November 2022, Dental Monitoring sued Align Technology, Inc. (“Align”) for infringement of claims of both the ’248 and ’409 patents, as well as a third patent not at

issue here.<sup>1</sup> J.A. 107–126. Dental Monitoring alleged that Align’s Invisalign Virtual Care AI platform and related apparatuses, which are accessories to its “Invisalign” dental aligner products, infringed claims of the ’409 and ’248 patents. J.A. 117–126.

In July 2023, the district court set the stage for a “patent showdown.” J.A. 241–43. The parties were required to each select one claim, undergo discovery, and then file cross-motions for summary judgment. *See id.* Dental Monitoring selected claim 14 (which depends from claim 1) of the ’248 patent and Align selected claim 12 (which depends from claim 1) of the ’409 patent (collectively, “the showdown claims”). *Decision*, 2024 WL 2261931, at \*1–2; J.A. 17. The parties stipulated that the court’s decision regarding the showdown claims would apply also to claim 1 of the ’248 patent and claims 1 and 7 of the ’409 patent. *See* J.A. 18; J.A. 22–23.

The relevant claims of the ’248 patent recite:

1. A method for assessing the shape of an orthodontic aligner, said method comprising the following steps:

a) more than 1 week after the start of the treatment with the aligner, acquisition of at least one image at least partially representing the aligner in a service position in which it is worn by a patient, called “analysis image”, the analysis image being a photograph, or an image extracted from a film;

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<sup>1</sup> This case is one of three before us regarding the same set of patents and the same parties. *See Dental Monitoring SAS v. Align Tech., Inc.*, 2025-1752; *Dental Monitoring SAS v. Align Tech., Inc.*, 2025-1879.

b) analysis of the analysis image by means of a deep learning device, trained by means of a learning base, so as to determine a value

for at least one tooth attribute of an “analysis tooth zone” representing, at least partially, a tooth on said analysis image, the tooth attribute relating to a separation between the tooth represented by the analysis tooth zone, and the aligner represented on the analysis image,

in the step a), a cellphone is used to acquire the analysis image.

14. The method as claimed in claim 1, in which the step b) comprises the following steps:

1) creation of a learning base comprising more than 1000 images of dental arches, or “historical images”, each historical image representing an aligner worn by a “historical” patient and comprising one or more zones each representing a tooth, or “historical tooth zones”, to each of which, for at least one tooth attribute relating to a separation between the tooth represented by the historical tooth zone considered, and the aligner represented, a tooth attribute value is assigned;

2) training of at least one deep learning device, by means of the learning base;

3) submission of the analysis image to the deep learning device for it to determine at least one probability relating to:

the presence, in a location of said analysis image, of an analysis tooth zone; and

the attribute value of the tooth represented on said analysis tooth zone;

4) determination, as a function of said probability, of an amplitude of said separation.

'248 pat., col. 32 ll. 6–23; *id.* at col. 34 ll. 21–42. The relevant claims of the '409 patent recite:

1. A method for acquiring an image of a dental arch of a patient, said method comprising the following steps:

a) activation of an image acquisition apparatus so as to acquire an image, called “analysis image”, of said arch;

b) analysis of the analysis image by means of a deep learning device trained by means of a learning base;

c) determination, for the analysis image, as a function of the results of the analysis in the preceding step, of a value for an image attribute;

d) comparison of said image attribute value with a setpoint;

e) sending of an information message as a function of said comparison, the information message being related to the quality of the image acquired or to the position of the acquisition apparatus in relation to said arch or to the setting of the acquisition apparatus or to the opening of the mouth or to the wearing of a dental appliance, or to a combination thereof,

to check whether the analysis image respects the setpoint and, if it does not respect the setpoint, to

guide the operator in order for him or her to acquire a new analysis image.

7. The method as claimed in claim 1, in which the step b) comprises the following steps:

1) creation of a learning base comprising more than 1000 images of dental arches, or “historical images”, each historical image comprising an attribute value for at least one image attribute, or “image attribute value”;

2) training of at least one deep learning device by means of the learning base;

3) submission of the analysis image to the deep learning device for it to determine, for said analysis image, at least one probability relating to said image attribute value.

12. The method as claimed in claim 1, in which the information message is sent by the acquisition apparatus.

'409 pat., col. 32 ll. 13–33; *id.* at col. 33 ll. 10–21; *id.* at col. 34 ll. 34–35.

In January 2024, the parties filed cross-motions for summary judgment. J.A. 97; *see* J.A. 263; J.A. 429. Dental Monitoring argued that Align infringed the showdown claims as a matter of law. *Decision*, 2024 WL 2261931, at \*2. Align argued that the same claims were directed to ineligible subject matter under § 101.<sup>2</sup> *Id.*

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<sup>2</sup> Align also argued that the showdown claims were invalid under 35 U.S.C. § 112. *Decision*, 2024 WL 2261931, at \*2. It repeats that argument before us. Resp. Br. 63–64. Because we agree with Align that the

DENTAL MONITORING SAS v. ALIGN TECHNOLOGY, INC.

7

The district court agreed with Align and, applying the two-step framework set forth in *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208 (2014), concluded that the showdown claims were ineligible under § 101 as a matter of law. *Decision*, 2024 WL 2261931, at \*3–9. The court concluded, at *Alice* step one, that claim 14 of the '248 patent was “directed to [the] patent-ineligible concept” of “collecting information, analyzing it, and displaying certain results of the collection and analysis.” *Id.* at \*3–4 (quoting *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016)). Similarly, it concluded that, regarding dependent claim 12 of the '409 patent, independent claim 1 was directed to the abstract idea of acquiring and analyzing an image, then presenting the image in a message to guide the user to take a new image. *Id.* at \*6. The district court then reasoned that claim 12 thus “merely recite[d] a common practice long performed by dental practitioners.” *Id.*

At *Alice* step 2, the district court concluded there was no “inventive concept” that rendered claim 14 of the '248 patent eligible because the claim used generic hardware to simply accomplish the abstract idea in the specific field of dental aligner assessment. *Id.* at \*7. The district court reached a similar conclusion for claim 12 of the '409 patent, concluding that there was no inventive concept to save the claim, as “the[] claim limitations d[id] not amount to significantly more than the execution of an abstract idea by means of generic computer components.” *Id.* at \*8.

Dental Monitoring timely appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

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showdown claims are ineligible under § 101, we need not reach that argument.

## STANDARD OF REVIEW

We review a district court’s grant or denial of summary judgment under the law of its regional circuit, here, the Ninth Circuit. *See Landmark Screens, LLC v. Morgan, Lewis, & Bockius, LLP*, 676 F.3d 1354, 1361 (Fed. Cir. 2012) (citation omitted). The Ninth Circuit “review[s] the district court’s grant of summary judgment *de novo*, determining whether, viewing all evidence in the light most favorable to the nonmoving party, there are any genuine issues of material fact and whether the district court correctly applied the relevant substantive law.” *Id.* (alteration in original) (quoting *Kraus v. Presidio Tr. Facilities Div./Residential Mgmt. Branch*, 572 F.3d 1039, 1042–43 (9th Cir. 2009)). Moreover, we apply our own law to questions of patent law, and, as relevant here, determinations of subject-matter eligibility under § 101 are reviewed *de novo*. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016) (citation omitted).

## DISCUSSION

Section 101 of the Patent Act defines the subject matter eligible for patent protection as “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” However, that provision has been held by the Supreme Court to be subject to the limitation that “[l]aws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice*, 573 U.S. at 216 (citation omitted). Under the two-step framework in *Alice*, we first ask whether the claims are directed to “one of those patent-ineligible concepts,” and, if so, we next ask whether they include an “inventive concept” sufficient to transform that ineligible concept into patent-eligible subject matter. *Id.* at 217–18.

Dental Monitoring argues that the district court erred in concluding that the showdown claims are directed to patent-ineligible subject matter. *See Open. Br. 4*. We address each *Alice* step in turn.

## I

Under *Alice* step one, we examine the showdown claims to see if they are directed to a “patent-ineligible concept,” such as an abstract idea. *See* 573 U.S. at 216–17. After doing so here, we conclude that the showdown claims are directed to abstract ideas and thus fail *Alice* step one.

Claim 14 of the ’248 patent is directed to the abstract idea of collecting and analyzing image information using a deep learning device. *See* ’248 pat., col. 32 ll. 6–23 (method in claim 1 comprising the steps of “acquisition of . . . [an] analysis image” via a cell phone and “analysis of the analysis image by means of a deep learning device”); *id.* at col. 34, ll. 21–42 (claim 14 specifying deep learning device analysis details). Claim 12 of the ’409 patent is directed to the abstract idea of image acquisition, analysis via a “deep learning device,” comparison to a setpoint, and transmittal of the analysis result. *See* ’409 pat., col. 32 ll. 13–33; *id.* at col. 34, ll. 34–35 (claim 12 specifying the image transmittal to be via acquiring apparatus); *see also id.* at col. 33 ll. 10–21 (claim 7 specifying deep learning device analysis).

Both claims thus fall within the “familiar class of [patent-ineligible] claims” that focus on “collecting information, analyzing it, and displaying certain results of the collection and analysis.” *See Elec. Power Grp.*, 830 F.3d at 1353–54 (holding claims ineligible that “gather[ed] and analyz[ed] information of a specified content, then display[ed] the results”).

That the claims utilize a “deep learning device” to analyze the images does not change our analysis. The specifications state that the “deep learning device” is “preferably a neural network” that could be from a preset list of many “networks specializing in the classification of images” or “networks specializing in the location and detection of objections in an image.” *See* ’248 pat., col. 16 ll. 5–36; ’409 pat., col. 16 ll. 13–43. The showdown claims are thus ineligible because they simply apply machine

learning to the above-mentioned abstract ideas in a new environment—the field of dental arch image analysis. *See Recentive Analytics, Inc. v. Fox Corp.*, 134 F.4th 1205, 1213–14 (Fed. Cir. 2025) (holding claims ineligible where they applied generic machine learning components in a new field of use), *cert. denied*, 146 S. Ct. 891 (2025).

Furthermore, while claim 14 of the '248 patent and claim 7 of the '409 patent require that the “deep learning device” be trained in a specific manner —*i.e.*, on a “learning base” comprising more than a thousand images of dental arches, *see* '248 pat., col. 34 ll. 21–33; '409 pat., col. 33 ll. 12–17—that does not mean they provide a specific technological solution that would render the claims patent-eligible. That a “deep learning device” be trained on a specific subset of data is “incident to the very nature of machine learning,” and thus is not a “technological improvement” rendering the claims eligible under § 101. *See Recentive*, 134 F.4th at 1212.

Dental Monitoring argues that claim 14 of the '248 patent provides a specific technological solution because the trained device quantitatively assesses the separation between an aligner and teeth on a tooth-by-tooth basis. Open. Br. 24–25; Reply Br. 9–15. It contends that the method in claim 14 is “an advance in orthodontic technology itself” because the “deep learning device” can “perform [a] more precise and objective evaluation of the fit of an aligner than was previously possible.” Reply Br. 12; *see also* Oral Arg. 00:30–00:47, available at [cafc.uscourts.gov/oral-arguments/24-2270\\_06082026.mp3](https://cafc.uscourts.gov/oral-arguments/24-2270_06082026.mp3). But that argument is unpersuasive. Fatal to Dental Monitoring’s argument is that it ignores the language of the claim itself; nothing in claim 14 requires a specific quantitative assessment beyond the ability of an orthodontist. *See* '248 pat., col. 32 ll. 6–23, col. 34 ll. 21–42.

The claim does require the “determination . . . of an amplitude of said separation [between the tooth and

aligner].” *Id.* at col. 34 ll. 41–42. Orthodontists, however, regularly make such a determination without the use of a “deep learning device.” *See* ’248 pat. col. 1 ll. 12–13; *id.* at col. 15 l. 65–col. 16 l. 4; J.A. 526–27. At most, the claimed methods may perform such determination of the amplitude of separation with greater efficiency or speed due to the nature of the generic “deep learning device.” But that does not render the claims patent-eligible. *See Recentive*, 134 F.4th at 1214 (“[T]he 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.”).

## II

We next turn to *Alice* step two. Here, we look to see if the showdown claims “include ‘additional features’ to ensure that the claims are more than a drafting effort designed to monopolize the abstract idea.” *See Alice*, 573 U.S. at 221 (citation modified and internal citation omitted). Accordingly, we look at whether the claim elements add an “inventive concept” in the application of collecting, analyzing, and displaying image data. *See Elec. Power Grp.*, 830 F.3d at 1353.

The showdown claims fare no better at step two, as there is no “inventive concept” sufficient to transform the ineligible abstract idea into patent-eligible subject matter. As stated previously, the “deep learning device” from each claim is conventional; the patents themselves explain that the device can be chosen from a list of well-known and available neural networks. *See* ’248 pat., col. 16 ll. 5–36; ’409 pat., col. 16 ll. 13–43. And that generic “deep learning device” is used in the process of assessing aligner fit via image capture, analysis, and display—*i.e.*, the abstract idea itself. Accordingly, we see nothing in the showdown claims that “transforms the claims into something ‘significantly more’ than a claim on the patent-ineligible

concept itself.” See *Broadband iTV, Inc. v. Amazon.com, Inc.*, 113 F.4th 1359, 1370 (Fed. Cir. 2024) (quoting *Alice*, 573 U.S. at 217–18).

Dental Monitoring argues that the claims pass muster under *Alice* step two because the “deep learning device” must be trained in a specific process. See Reply Br. 22–23, 25. We disagree. As we stated previously, that a machine learning model is specially trained is “incident to the very nature of machine learning.” See *Recentive*, 134 F.4th at 1212. That the “deep learning device” here is trained on specific images does not make the “deep learning device” *itself* non-generic.

Dental Monitoring next argues that using “deep learning devices” to guide orthodontic treatment was not “conventional” at the time the patent issued. See Reply Br. 24–25. But that misses the mark because “the relevant inquiry is not whether the claimed invention as a whole is unconventional or non-routine.” See *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018). Rather, we look for an “inventive concept” that “transforms the claims into something ‘significantly more’” than the abstract idea. See *Broadband iTV*, 113 F.4th at 1370 (quoting *Alice*, 573 U.S. at 217–18). To the extent that Dental Monitoring considers the “deep learning device” to be “something significantly more” so as to render the claims patent-eligible, that argument is unavailing given that the patents themselves confirm that the “deep learning device” is generic.

And finally, Dental Monitoring’s alternative argument that there is a factual dispute regarding the well-understood nature of the claims so as to prevent a grant of summary judgment is unavailing. See Open. Br. 42, 59–60. There is no factual dispute regarding the generic nature of the “deep learning device,” because, as we note above, the patents themselves confirm its conventional nature. See ’248 pat., col. 16 ll. 5–36 (confirming that the

DENTAL MONITORING SAS v. ALIGN TECHNOLOGY, INC.

13

“deep learning device” could be chosen from neural networks made by, *e.g.*, Google or Microsoft); ’409 pat., col. 16 ll. 13–43 (same).

#### CONCLUSION

We have considered Dental Monitoring’s remaining arguments but find them unpersuasive. For the foregoing reasons, we *affirm* the district court’s conclusion that claims 1, 7, and 12 of the ’409 patent and claims 1 and 14 of the ’248 patent are ineligible under § 101 and hence invalid.

**AFFIRMED**