

Marla R. Butler, *pro hac vice*
marla.butler@thompsonhine.com
Two Alliance Center
3560 Lenox Road Suite 1600
Atlanta, Georgia 30326-4266
Telephone: (404) 407-3680

Jeffrey C. Metzcar, *pro hac vice*
jeff.metzcar@thompsonhine.com
10050 Innovation Dr., #400
Miamisburg, OH 45342
Telephone: (937) 443-6841

Jesse L. Jenike-Godshalk, *pro hac vice*
Jesse.Godshalk@ThompsonHine.com
312 Walnut Street, Suite 2000
Cincinnati, Ohio 45202
Tel.: (513) 352-6700
Fax: (513) 241-4771

Andrew Himebaugh, *pro hac vice*
andy.himebaugh@thompsonhine.com
20 N. Clark Street, Suite 3200
Chicago, IL 60602
Telephone: (312) 998-4247

Jennifer Seraphine (State Bar No. 245463)
seraphine@turnerboyd.com
Vyson Hsu (State Bar No. 322336)
hsu@turnerboyd.com
TURNER BOYD SERAPHINE LLP
155 Bovet Road, Suite 750
San Mateo, CA 94402
Telephone: (650) 521-5930

*Attorneys for Defendants/Counterclaim-
Plaintiffs Caption Health, Inc. & GE
HealthCare Technologies Inc.*

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

UNIVERSITY OF BRITISH COLUMBIA,

Plaintiff,

v.

CAPTION HEALTH, INC.; GE
HEALTHCARE TECHNOLOGIES INC.,

Defendants.

Case No. 5:24-cv-03200-EKL

**DEFENDANTS' CLAIM
CONSTRUCTION BRIEF**

Judge: Eumi K. Lee

UBC-2048

Caption Health v. University of British Columbia
IPR2025-01422

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U.S. Patent Nos. 11,129,591 1, 2, 3, 6, 7, 8, 9, 11, 12, 13, 15, 19

I. INTRODUCTION

Plaintiff, the University of British Columbia, asserts infringement of every claim of its U.S. Patent Nos. 11,129,591 (“the ’591 patent”) and 10,751,029 (“the ’029 patent”), *i.e.*, a total of 50 asserted claims. Both patents are directed to computer-implemented systems and methods for assessing the quality of ultrasound images, particularly echocardiographic images of the heart.

Defendants, Caption Health, Inc. and its parent company GE HealthCare Technologies, Inc., deny infringement and have set forth many of their bases for noninfringement in Defendants’ First and Third Amended Counterclaims. *See* Dkt. 85. Additionally, Defendants have petitioned the Patent Trial and Appeal Board (“PTAB”) at the United States Patent and Trademark Office (“USPTO”) for *inter partes* review (“IPR”) of the asserted patents on the grounds that they were erroneously granted without proper consideration of the most pertinent prior art.

Despite facing 50 asserted claims, Defendants have identified here only four claim terms that, when properly construed by the Court, will be dispositive with respect to one or more of Plaintiff’s infringement claims. Plaintiff, for its part, urges the Court that no construction is needed for any of the claim terms identified by Defendants—a common litigation tactic by patentees. By opposing any definitive construction and urging, instead, an undefined “plain and ordinary meaning,” Plaintiff aims to avoid summary judgment of noninfringement and eventually argue its case to a jury. But, permitting Plaintiff to duck claim construction so it can present its interpretation of the claims to a jury is not appropriate where, as here, the Parties have a clear dispute over the scope of the claim language.

It is the Court’s responsibility, not the jury’s, to determine the correct claim construction. And, under this Court’s Patent Local Rules, the appropriate time to resolve disputes regarding the scope of the claims is during these claim construction proceedings. Merely adopting the “plain and ordinary meaning,” as urged by Plaintiff, would not resolve the Parties’ disputes with respect to scope of the asserted claim language. *See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (finding that “the district court failed to resolve the parties’ dispute because the parties disputed not the *meaning* of the words themselves, but the *scope* that should be encompassed by this claim language.”) (“A determination that a claim term ‘needs no

construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’ meaning does not resolve the parties’ dispute.”). Accordingly, Defendants respectfully request that the Court adopt Defendants’ proposed constructions.

II. BACKGROUND AND OVERVIEW OF THE PATENTS-IN-SUIT

Ultrasound is a commonly used medical imaging modality that can provide non-invasive, cross-sectional views of an anatomic region-of-interest (“ROI”), such as the heart or a fetus. These ROIs can be viewed from different angles to reveal different medically significant structures or processes such as the circumference of the fetal head, the four adjacent chambers of the heart, or the opening and closing of a heart valve. Therefore, radiologists have adopted a series of standardized “views” (i.e., two-dimensional planes) that each highlight respective structures within a ROI.

The manual acquisition of standard ultrasound views, *i.e.*, the accurate positioning of the ultrasound probe to capture an image of the desired two-dimensional plane through an object, requires significant operator skill and experience. Therefore, computer implemented methods and systems have been devised—since no later than 2005—to provide real-time feedback to ultrasound operators with automatic assessments of the view and quality of captured ultrasound images. *See, e.g.*, Ex. A (US2005/0251013 (“Krishnan”)) at [0009], [0020], [0032]; Ex. B (WO2016/189313 (“Paterson”)) at 1:1-7, 1:24-32, 2:16-21, 3:9-25, 6:30-7:2.

A. The ‘591 Patent

The ‘591 patent is directed to a computer-implemented system for automatically assessing the quality of ultrasound images of the heart, *i.e.*, “echocardiographic images.” Ex. C at Abstract, 1:15-17. The purported invention implements a workflow that first associates a received echocardiographic image with one of a “plurality of predetermined echocardiographic image view categories” and then determines a “quality assessment value” “based on” the view category of the image. *Id.* at 1:38-64, 7:53-8:65, Fig. 3. Examples of standard echocardiographic view categories include “AP2 (apical 2-chamber view)” and “AP4 (apical 4-chamber view).” *Id.* at 9:1-7.

1 The '591 patent states the obvious—*i.e.*, “the desirable characteristics for each of the
 2 different views may differ and so it may be desirable to determine quality assessment values for
 3 the echocardiographic images in different ways, depending on what view the echocardiographic
 4 images are.” *Id.* at 5:62-66. Guided by this rationale, the patent directs that “different analyses
 5 may be applied to a set of echocardiographic images, depending on which view category [the] set
 6 of echocardiographic images falls within” (*id.* at 8:63-65) and “each view category may be
 7 associated with a different function for assessing quality of images.” (*id.* at 9:16-18).

8 The '591 patent implements view-category-specific image quality assessment by providing
 9 a unique image quality assessment neural network for each respective view category of the
 10 plurality of predetermined echocardiographic view categories. *Id.* at 6:1-16, 11:34-59, 13:26-38.
 11 Once an image has been associated with one of the predetermined view categories, the patented
 12 workflow determines which of the plurality of view-category-specific neural networks is
 13 associated with the same view category as the image and the image is input into that view-category-
 14 specific neural network to output a view-category-specific image quality assessment value. *Id.* at
 15 6:1-16, 14:5-49, Fig. 7 (302), Fig. 10 (342).

16 **B. The '029 Patent**

17 The '029 patent shares four common co-inventors with the '591 patent and is directed to
 18 similar subject matter. *Compare* Ex. D with Ex. C. Specifically, the '029 patent is directed to a
 19 computer-implemented method of automatically analyzing ultrasound images to determine an
 20 image property (*e.g.*, a view category) of the images and assess their quality. Ex. D at Abstract,
 21 1:35-50, Fig. 3. However, whereas all claims of the '591 patent are limited to “echocardiographic
 22 images” of the heart, the claims of the '029 patent are more broadly directed to “ultrasound
 23 images” generally. And, whereas all claims of the '591 patent require the use of “neural networks,”
 24 at least independent claims 1 and 21 of the '029 patent do not recite, and are not limited to, using
 25 neural networks.

26 **III. LEGAL STANDARDS FOR CLAIM CONSTRUCTION**

27 The claims of a patent define the protected invention. *Phillips v. AWH Corp.*, 415 F.3d
 28 1303, 1312 (Fed. Cir. 2005) (*en banc*). When the parties raise a dispute regarding the proper scope

of an asserted patent claim, the court, not the jury, must resolve that dispute. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996); *O2 Micro*, 521 F.3d at 1361-63.

A. Intrinsic Evidence

When determining the meaning and scope of a claim term, the court must consider, first and foremost, the intrinsic evidence, which consists of the words of the claims, the remainder of the patent specification, and the patent’s prosecution history. *Phillips*, 415 F.3d at 1314; *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). This intrinsic evidence comprises the indisputable public record upon which the public is entitled to rely. *Phillips*, 415 F.3d at 1318-19.

1. The Words of the Claims

Claim construction “begins and ends in all cases with the actual words of the claims.” *Renishaw PLC v. Marposs Societa’ Per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). A claim construction “that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Phillips*, 415 F.3d at 1316 (quoting *Renishaw*, 158 F.3d at 1250).

The words in a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art in question. *Vitronics*, 90 F.3d at 1582. “Importantly, a person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in the which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313. Thus, “[p]roperly viewed, the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.* at 1321.

2. The Patent’s Specification

“The importance of the specification in claim construction derives from its statutory role.” *Phillips*, 415 F.3d at 1316. “The close kinship between the written description and the claims is enforced by the statutory requirement that the specification describe the claimed invention in ‘full, clear, concise, and exact terms.’” *Id.* (quoting 35 U.S.C. § 112, ¶ 1). “Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the

inventors actually invented and intended to envelop with the claim.” *Renishaw*, 158 F.3d at 1250. Therefore, “the best source for understanding a technical term is the specification from which it arose.” *Phillips*, 415 F.3d at 1315 (citation omitted). “[T]he specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* (quoting *Vitronics*, 90 F.3d at 1582). “The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.” *Vitronics*, 90 F.3d at 1582. “It is therefore entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims.” *Phillips*, 415 F.3d at 1317.

Care should be taken, however, not to read limitations from the specification into the claims without proper basis. “[I]t is manifest that a claim must explicitly recite a term in need of definition before a definition may enter the claim from the written description.” *Renishaw*, 158 F.3d at 1248.

3. The Patent’s Prosecution History

The prosecution history is the complete public record of the application proceedings before the United States Patent and Trademark Office, including representations, claim amendments and arguments made by the applicant regarding the scope of the claims. *Vitronics*, 90 F.3d at 1582. “[L]ike the specification, the prosecution history was created by the patentee in attempting to explain and obtain the patent.” *Phillips*, 415 F.3d at 1317. Therefore, “the prosecution history can often inform the meaning of claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Id.* “[U]se of the prosecution history ensures that claims are not construed one way in order to obtain their allowance and in a different way against accused infringers. . . .” *Rhodia Chimie & Rhodia, Inc. v. PPG Industries Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005).

B. Extrinsic Evidence

“In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term.” *Vitronics*, 90 F.3d at 1583. But, when needed to understand scientific principles or the meanings of technical terms of art, the court may also rely on extrinsic evidence,

which consists of all evidence external to the patent and its prosecution history. *Phillips*, 415 F.3d at 1322-23. Prior art patents or printed publications, for example, can often help to demonstrate how a disputed claim term was generally used by those skilled in the art at the time of the invention. *Vitronics*, 90 F.3d at 1584. Extrinsic evidence should not, however, be used to change the meaning of claim language that is apparent from the intrinsic evidence. *Phillips*, 415 F.3d at 1318-19.

IV. CONSTRUCTION OF DISPUTED CLAIM TERMS

A. Each Set of Assessment Parameters Defines a Respective Neural Network

Claim Language	Plaintiff's Proposed Construction	Defendants' Proposed Construction
“each of the plurality of predetermined echocardiographic image view categories is associated with a respective set of assessment parameters, each of the sets of assessment parameters being a set of neural network parameters that define a neural network having a plurality of layers” (<i>'591 patent, claims 1, 11, 15</i>)	No construction necessary, plain and ordinary meaning	“each of the plurality of predetermined echocardiographic image view categories is associated with a respective set of assessment parameters, each of the sets of assessment parameters being a set of neural network parameters that define a <u>respective view-category-specific</u> neural network having a plurality of layers”

Defendants request that the Court construe this claim term to make explicit that the claimed “neural network” is a “respective view-category-specific neural network.” This is important because Plaintiff seeks to interpret this claim language as leaving open the possibility that the claimed “sets of assessment parameters” define a *single* multilayer neural network rather than a plurality of multilayer neural networks. It is clear from the intrinsic evidence, however, that the claim language is intended to mean that each respective set of assessment parameters defines a respective neural network that is specific to one echocardiographic image view category. Accordingly, Defendants’ proposed construction of this claim term is: “each of the plurality of predetermined echocardiographic image view categories is associated with a respective set of assessment parameters, each of the sets of assessment parameters being a set of neural network parameters that define a respective view-category-specific neural network having a plurality of

1 layers.” This construction does not add new limitations; it merely makes explicit what is explicitly
 2 explained in the prosecution history on which the public is entitled to rely.

3 Each independent claim of the ’591 patent recites “a plurality of predetermined
 4 echocardiographic image view categories.” Ex. C at 34:15-16 (claim 1), 36:42-43 (claim 11),
 5 38:26-27 (claim 15). The claimed “plurality” could consist of two predetermined view categories,
 6 or it might contain, for example, ten predetermined view categories.

7 Each independent claim of the ’591 patent also recites that “each of the plurality of
 8 predetermined echocardiographic image view categories is associated with a respective set of
 9 assessment parameters.” *Id.* at 34:42-47, 37:24-29, 38:54-59 (emphasis added). The language
 10 “each of *the* plurality” or “each of *said* plurality” means every member of the previously defined
 11 plurality. *See, e.g., Smith Sport Optics, Inc. v. Burton Corp.*, No. 21-cv-02112-CMA-KAS, 2024
 12 U.S. Dist. LEXIS 149010 *27-32 (D. Colo. Aug. 20, 2024); *Mangosoft, Inc. V. Oracle Corp.*, No.
 13 02-545-SM, 2004 U.S. Dist. LEXIS 19357, at *12-14 (D.N.H. Sept. 21, 2004); *Constructive*
 14 *Designs, LLC v. Pepsi-Cola Co.*, No. LA CV12-02765 JAK (PLAx), 2013 U.S. Dist. LEXIS
 15 209560 *45 (C.D. Cal. Mar. 13, 2013); *Indus. Print Techs. v. Cenveo, Inc.*, No. 3:15-md-2614-M,
 16 2016 U.S. Dist. LEXIS 202997 *77-78 (N.D. Tex. Feb. 12, 2016). Therefore, the plain meaning
 17 of the claim language is that every predetermined view category within the plurality of
 18 predetermined view categories—no matter how many predetermined view categories there are—
 19 is associated with its own set of assessment parameters. If the patentee had wished to instead claim
 20 that less than every one of the predetermined view categories was associated with a respective set
 21 of assessment parameters, it could have easily done so. For example, the claim could have been
 22 written: (i) “a plurality of view categories, *some of which* ...”; (ii) “a plurality of view categories,
 23 *at least one of which* ...”; or (iii) “a plurality of view categories, *a plurality of which*” Instead,
 24 patentee specifically claimed that “*each of the* plurality” is associated with a respective set of
 25 assessment parameters.

26 Likewise, each independent claim of the ’591 patent further states: “each of the sets of
 27 assessment parameters being a set of neural network parameters that define a neural network
 28 having a plurality of layers.” *Id.* at 34:42-47, 37:24-29, 38:54-59 (emphasis added). This does not

mean, as Plaintiff contends, that all of the assessment parameters together form a single neural network. Instead, this language—as confirmed by the surrounding claim language—means that each respective set of assessment parameters defines a respective neural network having a plurality of layers. For example, each independent claim of the ’591 patent also recites the steps of: (i) “in response to determining that [a] first set of assessment parameters is associated with the first view category, inputting the first at least one echocardiographic image into the neural network defined by the first set of assessment parameters” (Ex. C at 34:56-60, 37:39-43, 39:1-5 (emphasis added)); and (ii) “in response to determining that [a] second set of assessment parameters is associated with the second view category, inputting the second at least one echocardiographic image into the neural network defined by the second set of assessment parameters” (*id.* at 34:66-35:3, 37:49-54, 39:14-19 (emphasis added)). The meaning of the claim would be different if, for example, it recited that “the sets of assessment parameters define a neural network.” Instead, it recites that “each of the sets ... define a neural network.”

Because the claim language requires that “each” of the plurality of predetermined echocardiographic image view categories is associated with a “respective” set of assessment parameters, and because “each” of the sets of assessment parameters defines a neural network having a plurality of layers, this means that each predetermined view category is associated with its own view-category-specific multilayer neural network. For example, and for the avoidance of doubt, if the claimed plurality of predetermined echocardiographic image view categories includes ten view categories, then the claims also require ten multilayer neural networks—one for “each” predetermined view category.

The patent specification unambiguously confirms the meaning of the claim language that is made explicit in Defendants’ construction. The specification states that “each view category may be associated with a different function for assessing quality of images” (*id.* at 9:1 6-18) and “[a]pplying the function to a set of images may involve inputting the set of images into a view category specific image assessment neural network” (*id.* at 6:13-16 (emphasis added)). The specification also states that “a plurality of sets of parameters, each set defining a neural network, may be stored ... and each of the sets of parameters may be associated with a view category to

1 indicate that the set of parameters defines a neural network that is to be applied to
 2 echocardiographic images which are associated with that view category.” *Id.* at 11:52-59
 3 (emphasis added). For example:

4 “[A]n exemplary view category specific neural network record for storing a set of
 5 parameters defining the set of view category specific layers ... is shown at 340 in
 6 FIG. 10. Referring to FIG. 10, the view category specific neural network record
 7 340 includes a view category identifier field 342 for storing a view category
 identifier identifying which view category the record is associated with and
 seventh, eighth, ninth, and tenth sets of fields 344, 346, 348, and 350 for storing
 parameters defining [a] set of view category specific layers”

8 *Id.* at 13:26-36 (emphasis added). Thus, “each of the image view categories ... may be associated
 9 with a view category specific neural network record.” *Id.* at 13:48-52 (emphasis added).

10 Despite these clear statements, Plaintiff attempts to obfuscate by setting up a straw man
 11 argument to knock down. First, and importantly, Plaintiff admits, as Defendants have argued here,
 12 that “the claim says ... that there is a neural network with multiple layers for each view.” Dkt. 92
 13 at 11:7-8 (emphasis added). The Court’s construction of this term should, at the very least, capture
 14 this point on which the parties agree. Plaintiff further argues, however, that “Defendants’
 15 construction, *if* it purports to assert that neural networks cannot share layers or overlap, is
 16 inconsistent with the specification” *Id.* (emphasis added). Defendants do not make that
 17 argument; Defendants do, however, dispute Plaintiff’s attempt to permit complete overlap and
 18 sharing of all neural network layers for more than one view category, *i.e.*, a single neural network.
 19 The distinction is best explained with reference to Fig. 8 of the ’591 patent, which is reproduced
 20 below.

21 According to one disclosed embodiment of the invention, the respective view-category-
 22 specific neural networks may share some common layers—but they still constitute different neural
 23 networks. Specifically, the specification states:

24 Referring to FIG. 8, the neural network 360 includes 5 image quality assessment
 25 neural networks, each including the same shared layers 362 but including a
 26 different set of view category specific layers 370, 372, 374, 376, and 378. In
 27 various embodiments, the shared layers 362 and the view category specific
 28 layers 370, 372, 374, 376, and 378 may each be considered neural networks and it
 will be understood that a neural network may include more than one neural network
 within.

Id. at 12:10-18 (emphasis added).

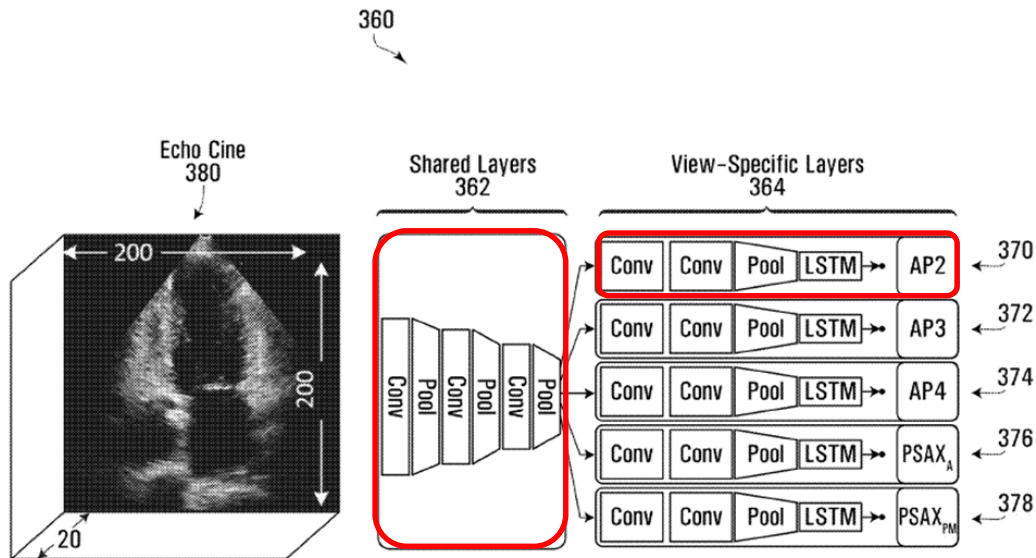


FIG. 8

Thus, Fig. 8 above is described as containing 5 view-category-specific neural networks (370, 372, 374, 376, 378)—each containing some shared layers with common assessment parameters (362) and each containing a plurality of view-specific layers (364) having view-category-specific assessment parameters. Images enter at the left and then travel through one of five alternate streams. For example, the view-category-specific neural network for assessing images in the standard AP2 view category is annotated in red above.

Plaintiff's straw man argument is that Defendants' proposed construction does not permit *any* sharing or overlap of common layers between the respective neural networks that are required for each layer. Defendants' construction does no such thing. Rather, Defendants' construction is consistent with the specification's description of Fig. 8, above, which contains distinct view-category-specific neural networks despite those networks sharing some layers. Plaintiff's interpretation, however, goes beyond mere sharing of *some* neural network layers, prompting Plaintiff to conclude that "[a] single neural network with specific parameters for a given view satisfies the claims." Dkt. 92, 1:19-20. That position, which Plaintiff will undoubtedly argue if

the Court does not provide a construction, flies in the face of the claim language, the description of the invention above, and the prosecution history of the '591 patent.

The prosecution history confirms that Applicant distinguished over the prior art by requiring “respective neural networks” for each view category. During prosecution of the '591 patent, the Examiner rejected every claim of the application (claims 1-24) as being anticipated by Krishnan (Ex. A) under 35 U.S.C. § 102. *See* Ex. E (Applicant Amendment and Response to Office Action) at 12 of 18. In response, Applicant amended each independent claim of the application (claims 1, 13, 17)¹ to add the disputed claim language, and Applicant provided contemporaneous remarks explaining the scope of the claimed invention. *See generally*, Ex. E. Applicant stated:

[A]mended claim 1 recites at least one processor configured to determine first and second quality assessment values of respective first and second echocardiographic images utilizing respective neural networks. Amended claim 17 recites a computer-implemented method for determining first and second quality assessment values of respective first and second echocardiographic images utilizing respective neural networks. The claims include determining that a set of assessment parameters is associated with a respective view category and, in response, inputting a corresponding echocardiographic image into a respective neural network to determine the respective quality assessment value of each image. Each neural network is defined by a respective set of assessment parameters associated with one of a plurality of predetermined view categories that may characterize echocardiographic image [T]he first and second images are input into neural networks defined by first and second sets of assessment parameters, respectively.

Id. at 13 of 18 thru 14 of 18 (emphasis added). Additionally, Applicant argued:

Krishnan fails to teach or suggest determining quality assessment values for each of two images using two respective neural networks corresponding to the respective view category of the image. Accordingly, Krishnan cannot and does not teach the claimed use of a first neural network defined by a first set of assessment parameters to determine a quality assessment value for a first image, and use of a second neural network defined by a second set of assessment parameters to determine a quality assessment value for a second image, wherein the assessment parameters defining each network are associated with a view category of the associated image.

Id. at 15 of 18 (emphasis added).

These remarks are unambiguous and make explicit the meaning of the disputed claim language. At the risk of repeating what has already been stated, and for the avoidance of any

¹ Application claims 1, 13, and 17 correspond to issued claims 1, 11, and 15 of the '591 patent.

confusion, the claim term requires more than simply unique assessment parameters for each view category; it also requires that each respective set of assessment parameters define a respective multi-layer neural network. Whereas Plaintiff will argue—as it must to establish infringement—that the claim language covers systems having fewer neural networks than the number of predetermined view categories, e.g., systems in which images from multiple view categories are assessed by the same neural network, that is inconsistent with the patent specification and, more importantly, the positions that Plaintiff took during prosecution. Accordingly, construction of this term as Defendants propose is both appropriate and necessary to remove any possible ambiguity for Plaintiff to later exploit.

B. Determining Which of the Sets of Assessment Parameters to Use

Claim Language	Plaintiff's Proposed Construction	Defendants' Proposed Construction
“determining that a first set of assessment parameters of the sets of assessment parameters is associated with the first view category” and “determining that a second set of assessment parameters of the sets of assessment parameters is associated with the second view category” ('591 patent claims 1, 11, 15)	No construction necessary, plain and ordinary meaning	“determining which of the respective sets of assessment parameters is associated with the first view category” and “determining which of the respective sets of assessment parameters is associated with the second view category”

The meaning of this claim language is straightforward and should not require any construction. As it is used in the claims—first with respect to a first image that has been associated with a first view category and then with respect to a second image that has been associated with a second view category—the disputed language simply refers to identifying which of the respective sets of assessment parameters corresponds to the same view category as the image to be assessed. However, although Plaintiff also contends that no construction is needed, it is apparent that Plaintiff intends to argue something other than the plain and ordinary meaning of this term. Specifically, Plaintiff argues that “determining” a set of assessment parameters, as used in this claim term, also refers to *creating* the assessment parameters, e.g., through neural network training.

1 See Dkt. 92 at 12:13-23 (“Thus, the specification describes that the claimed determination can
 2 occur at some point before analysis of the image.”), 13:7-9 (“[T]he specification ... describes the
 3 determination step with respect to determining parameters for each view category during the
 4 training phase and/or simply obtaining and using assessment parameters associated with a view
 5 category....”). That is an entirely different process that is addressed elsewhere in the claims and
 6 is not what the disputed claim language refers to. Accordingly, Defendants ask the Court to adopt
 7 Defendants’ construction, which makes *explicit* the plain and ordinary meaning and forecloses
 8 Plaintiff’s incorrect interpretation.

9 As addressed with respect to the previous term, each independent claim of the ’591 patent
 10 requires a “respective” set of assessment parameters for “each” of a “plurality” of predetermined
 11 echocardiographic image view categories. For images that have been associated with a first view
 12 category, this disputed claim term recites “determining that a first set of assessment parameters of
 13 the sets of assessment parameters is associated with the first view category.” Defendants construe
 14 this as “determining which of the respective sets of assessment parameters is associated with the
 15 first view category.” For images that have been associated with a second view category, the
 16 disputed claim term recites “determining that a second set of assessment parameters of the sets of
 17 assessment parameters is associated with the second view category.” Defendants construe this as
 18 “determining which of the respective sets of assessment parameters is associated with the second
 19 view category.”

20 The specification supports Defendants’ construction using the same terminology as the
 21 claim language. First, the specification explains that “a plurality of sets of parameters, each set
 22 defining a neural network, may be stored in ... memory ... and each of the sets of parameters may
 23 be associated with a view category to indicate that the set of parameters defines a neural network
 24 that is to be applied to echocardiographic images which are associated with that view category.”
 25 *Id.* at 11:52-59. Then, with reference to FIG. 11, the specification states:

26 The blocks included in the flowchart 400 may direct the analyzer processor
 27 100 to determine which of the sets of quality assessment parameters is associated
 28 with the same view category as the at least one echocardiographic image received
 at block 202 and to apply a function based on that set of quality assessment
 parameters.

The flowchart 400 begins with block 402 which directs the analyzer processor 100 to determine that a set of assessment parameters of the sets of assessment parameters stored in the location 146 is associated with the same view category that is associated with the at least one echocardiographic image received at block 202.

For example, in some embodiments, block 402 may direct the analyzer processor 100 to read “AP4” from the view category identifier field 302 of the view category record 300 associated with the echocardiographic image files received at block 202. Block 402 may direct the analyzer processor 100 to read the view category specific neural network records from the location 146 of the storage memory to find a view category specific neural network record that includes the same view category identifier of “AP4” and is therefore associated with the same view category. Accordingly, block 402 may direct the analyzer processor 100 to determine that the view category specific neural network record 340 includes the view category identifier of “AP4” and is therefore associated with the same view category that is associated with the at least one echocardiographic image received at block 202.

Id. at 13:62-14:26. (emphasis added). This description confirms Defendants’ construction.

If the patentee had wanted to claim the step of creating the assessment parameters instead of the step of determining which set of parameters to use from a plurality of sets, the claim language could have been drafted differently. For example, the claims could have instead recited “determining a first set of assessment parameters associated with a first view category.” That language has an entirely different meaning than the disputed claim language, which recites: “determining that a first set of assessment parameters of the sets of assessment parameters is associated with the first view category.” Indeed, when the patentee wanted to refer to the step of creating the assessment parameters, it used different claim language—e.g., in dependent claim 7, which recites “determine the sets of neural network parameters defining the neural networks.” Ex. C at 36:1-2. “[D]etermining that a ... set ... of the sets ... is associated with [a] ... view category,” as recited in the disputed term, has a different meaning than “determine[ing] the sets of neural network parameters defining the neural networks.” Accordingly, Defendants’ ask the Court to adopt Defendants’ construction and, thereby, prevent Plaintiff from representing an incorrect interpretation as being the “plain and ordinary meaning.”

C. Inputting the Image into the Appropriate Neural Network

Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“in response to determining that the [first/second] set of	No construction necessary, plain and	“in response to determining that the [first/second] set of

assessment parameters is associated with the [first/second] view category, inputting the [first/second] at least one echocardiographic image into the neural network defined by the [first/second] set of assessment parameters” (<i>’591 patent, claims 1, 11, 15</i>)	ordinary meaning	assessment parameters is associated with the [first/second] view category, inputting the [first/second] at least one echocardiographic image into the respective neural network defined by the [first/second] set of assessment parameters”
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The construction of this term follows directly from the construction of the first disputed term above. Defendants’ proposed construction is: “in response to determining that the [first/second] set of assessment parameters is associated with the [first/second] view category, inputting the [first/second] at least one echocardiographic image into the respective neural network defined by the [first/second] set of assessment parameters.” Although Defendants have added a word to the original claim language, this construction does not add any new limitations to the claim; it merely makes explicit what is explicitly required by the prosecution history.

During prosecution, the Applicant unambiguously represented that the claims, as amended, “recite[] ... determin[ing] first and second quality assessment values of respective first and second echocardiographic images utilizing respective neural networks.” Ex. E at 13 of 18 (emphasis added). And, consistent with Defendants’ construction, the Applicant stated, during prosecution, that “[t]he claims include determining that a set of assessment parameters is associated with a respective view category and, in response, inputting a corresponding echocardiographic image into a respective neural network.” *Id.* (emphasis added).

D. Extracted Feature Representations

Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“extracted feature representations” (<i>’029 patent, claims 1, 3-5, 7, 9-10, 14, 19, 21, 26-28, 30</i>)	“feature representations that are learned using a neural network”	“data representing extracted features”

This is the only term for which Plaintiff provides a proposed construction. Construction of this term was proposed by Plaintiff and is only relevant to the validity of the ’029 patent.

Plaintiff’s proposed construction is “feature representations that are learned using a neural network.” Thus, the effect (and purpose) of Plaintiff’s construction is only to define the claim term “extracted” in a manner that the claimed “feature representations” can *only* be obtained using

1 a neural network. That construction is overly limiting and unjustifiably reads in a new claim
2 limitation from the specification.

3 Independent claim 1 is illustrative. It broadly claims a “computer-implemented method”
4 that includes step of “deriving one or more extracted feature representations from [a] set of
5 ultrasound images.” Ex D at 23:33-38. Nowhere in claim 1 is there any mention of a “neural
6 network.” Not until, for example, dependent claim 4 is the limitation of a neural network
7 introduced into the claims. *Id.* at 23:57-62. This suggests that claim 1 is open to any form of
8 computer implementation, whereas claim 4 is more narrowly restricted to the particular neural
9 network embodiment described in the specification. *See Phillips*, 415 F.3d at 1315 (en banc)
10 (“[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption
11 that the limitation in question is not present in the independent claim. *See Liebel-Flarsheim Co. v.*
12 *Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004).”). Likewise, independent claim 21 broadly
13 claims a system for facilitating ultrasonic image analysis comprising a “processor configured to:
14 ... derive one or more extracted feature representations....” Ex. D at 25:42-47. Nowhere in claim
15 21 is there any mention of a “neural network.” Not until, for example, dependent claim 23 is the
16 limitation of a neural network introduced into the claim language. *Id.* at 26:15.

17 Although the written description of a patent often describes specific embodiments of the
18 invention, the Federal Circuit has repeatedly warned against restricting the scope of the claims to
19 just the disclosed embodiments, even when only a single embodiment is described. *Phillips*, 415
20 F.3d at 1323 (en banc). “That is not just because section 112 of the Patent Act requires that the
21 claims themselves set forth the limits of the patent grant, but also because persons of ordinary skill
22 in the art rarely would confine their definitions of terms to the exact representations depicted in
23 the embodiments.” *Id.* “It is the claims, not the preferred embodiments, that define the metes and
24 bounds of the patentee’s invention.” *IQRIS Techs. LLC v. Point Blank Enters.*, 130 F.4th 998, 1004
25 (Fed. Cir. 2025). “[T]he patentee is free to choose a term and expect to obtain the full scope of its
26 plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full
27 scope.” *Id.*

1 Plaintiff argues that its proposed construction “is *consistent with* the specification” of the
2 ’029 patent because, according to Plaintiff, “*whenever* the specification mentions ‘deriving
3 extracted feature representations,’ it explains that this step is performed using a neural network.”
4 Dkt. 92 at 15-16 (emphasis added). This is a quintessential example of a party attempting to insert
5 a new limitation that is not recited in the claim language. No matter how many examples Plaintiff
6 can point to in the specification where the “extracted feature representations” are obtained using a
7 neural network, the claim language, which controls the scope of the invention, is not limited to a
8 neural network—at least not until the dependent claims in which neural networks are explicitly
9 recited. Moreover, regardless of whether the patent ever describes any other embodiments in
10 which extracted feature representations are obtained using a technique other than a neural network,
11 the claim language should still be construed to cover all known techniques for extracting feature
12 representations from images absent a clear disavowal by the patentee. *See IQRIS Techs. LLC v.*
13 *Point Blank Enters.*, 130 F.4th 998, 1003-04 (Fed. Cir. 2025) (“Even when all embodiments in the
14 written description depict [a certain limitation], our precedent counsels against reading this
15 requirement into the claims when the claims do not expressly require as much.... [W]here there is
16 no evidence suggesting that the ordinary meaning ... is limited ..., we are not inclined to import
17 limitations from the preferred embodiments into the claimed invention. *Playtex Prods., Inc. v.*
18 *Procter & Gamble Co.*, 400 F.3d 901, 907-08 (Fed. Cir. 2005) (collecting cases).”

19 Many varied techniques—not based on neural networks—were known and available for
20 extracting feature representations from images prior to the filing of the ’029 patent application.
21 *See, e.g.*, Ex. I at 18-19 (Lorentzon) (discussing alternative techniques including neural networks);
22 Ex. J (Kumar, “A Detailed Review of Feature Extraction in Imaging Processing Systems”) (2014)
23 (same). The specification of the ’029 patent does not provide a special definition of “extracted
24 feature representations” that would exclude any of those other alternatives or restrict the step of
25 deriving extracted feature representations to just the use of neural networks. To the contrary, the
26 specification explicitly leaves open the possibility of using other techniques by addressing the use
27 of neural networks as being just one possible embodiment or implementation. For example, the
28 specification states:

1 The analyzer 14 may then derive one or more extracted feature representations
2 from the received set of ultrasound images. In some embodiments,
3 the analyzer 14 may implement a neural network including a feature extracting
neural network and the analyzer 14 may input the set of ultrasound images into the
feature extracting neural network in order to derive the one or more extracted
feature representations.

4 Ex. D, 6:35-41 (emphasis added). Therefore, the patentee did not disclaim alternative
5 embodiments or restrict the plain and ordinary meaning, which would include embodiments other
6 than neural networks.

7 Plaintiff's motivation is clearly to insert a new limitation into the claims to save their
8 validity. Defendants petitioned the Patent Office for *inter partes* review of the '029 patent on
9 August 15, 2025. *See generally*, Ex. F ('029 Patent IPR Petition). Defendants asserted that
10 numerous claims of the '029 patent, including independent claims 1 and 21, are anticipated under
11 35 U.S.C. § 102 by published U.S. patent application US2005/0251013 ("Krishnan"). *Id.* at 9.
12 On September 5, 2025, after Defendants' IPR Petition had been filed and served, Plaintiff proposed
13 that the term "extracted feature representations" should be construed. *See* Ex. G (Tagaki email
14 disclosing additional terms for construction). Subsequently, Plaintiff opposed Defendants' IPR
15 Petition by arguing that Krishnan does not invalidate claim 1 or 21 of the patent because it does
16 not derive one more "extracted feature representations" *as Plaintiff has construed that term*. Ex.
17 H at 14-15 ('029 DD Req.) Specifically, Plaintiff contends that Krishnan does not disclose the
18 extraction of feature representations *using a neural network*. *Id.*

19 Putting aside that Defendants dispute Plaintiff's characterization of Krishnan, Krishnan
20 straightforwardly discloses the disputed claim term as it is written, stating: "feature analysis
21 module (102) implements methods for automatically extracting one or more types of
22 features/parameters from input medical image data and combining the extracted
23 features/parameters in a manner that is suitable for processing." Ex. A at [0017] (emphasis added).
24 Indeed, Krishnan acknowledges known non-neural network techniques for extracting features
25 from images stating: "Feature extraction can implement known segmentation and/or filtering
26 methods for segmenting features or anatomies of interest" *Id.* at [0034]. That is plainly why
27 Plaintiff is attempting—through claim construction—to limit feature extraction to just the use of a
28

neural network. Plaintiff's proposed construction should be rejected because it is the result of a litigation tactic, not sound claim construction principles.²

Regardless of whether, or how, the Court construes this term, Plaintiff's construction should be rejected. Defendants did not identify this term for construction and, therefore, do not believe that construction is required. Nevertheless, if the Court is inclined to construe this term, Defendants' proposed construction is: "data representing extracted features." This construction helps to clarify the meaning of "representations" and is consistent with the specification of the '029 patent. *See, e.g.*, Ex. D, 8:39-40 ("extracted feature data").

E. Quality Assessment Value

Claim Language	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"quality assessment value" (<i>'591 patent claims, 1-3, 5, 7-17, 19</i>) (<i>'029 patent claims 1, 9-14, 21, 27-30</i>)	No construction necessary, plain and ordinary meaning	"score of diagnostic image quality"

Plaintiff contends that this term, which is used in both the '591 and '029 patents, does not require construction and should be given its "plain and ordinary meaning." Dkt. 92 at 6. Defendants agree that this term should be given its plain and ordinary meaning but, because the parties disagree as to what that plain and ordinary meaning is, Defendants offer a statement of the plain and ordinary meaning. It is apparent from Plaintiff's infringement allegation against the accused Caption Guidance AI product that Plaintiff is applying something other than the plain and ordinary meaning of the term "quality assessment value." Accordingly, the parties have a dispute

² Consider if the roles were reversed. Consider a scenario in which Defendants' accused products perform all the steps of claim 1 of the '029 patent—as they are recited—but extract feature representations from images using a technique other than a neural network. Imagine, in that scenario, Plaintiff's response to Defendants arguing that they do not infringe claim 1 because their accused products do not use a neural network. Undoubtedly, Plaintiff would vociferously argue that claim 1 does not recite or require a neural network unlike other claims. Plaintiff would accuse Defendants of trying to read in a new limitation from the specification based the description of preferred embodiments, just as Plaintiff is doing now. To deny it would be disingenuous.

over the scope of the plain and ordinary meaning of the claim language and claim construction is appropriate. *O2 Micro Int'l*, 521 F.3d at 1361.³

Defendants propose a construction that is consistent for both patents: “score of diagnostic image quality.” This construction is intended to be a statement of the plain and ordinary meaning—not a special definition based on, e.g., the patentee’s unique lexicography or a disavowal of claim scope within the prosecution history. Defendants’ expression of the plain and ordinary meaning is supported by the specifications of the patents. *See, e.g.*, Ex. C, Fig. 12 (424), Fig. 13 (442), Fig. 18 (784), 20:25-35 (“quality assessment value, which represents an aggregation of scores ...”), 15:52-54 (“the quality assessment values ... may be normalized to the same scale, which may be, for example, between 0 and 1 or between 0 and 5”); Ex. D, 16:50-58 (“the quality assessment values may be values between 0% and 100% representing whether the set of ultrasound images are suitable ... to assist in diagnosing a medical condition”). For example, the ’591 patents state:

In various embodiments, ... near real-time feedback to the operator may help the operator improve their skills and/or improve image quality for subsequently captured images. For example, in some embodiments, the operator may, in response to viewing a low-quality assessment value on the display 15, adjust positioning of the transducer and/or adjust image capture parameters, such as, for example, depth, focus, gain, frequency, and/or another parameter which may affect image quality in the system 10. The operator may make such adjustments until a high quality assessment value is provided on the display 15, for example, at which point the operator may be confident that the echocardiographic images captured are suitable for subsequent quantified clinical measurement of anatomical features and/or to assist in diagnosing a medical condition or a characteristic of the heart.

Ex. C, 5:30-45 (emphasis added). The ’029 patent states essentially the same. Ex. D 7:15-32. And, the ’029 patent uses the terms “quality assessment value” and “quality score” interchangeably. *See, e.g., id.* at 5:38-39 (“determining a quality assessment value acting as a quality estimation score”), , 7:7-14 (stating both “causing ... the quality assessment value ... to be displayed” and

³ Plaintiff’s opening brief purports to predict a noninfringement argument that Defendants might present, and Plaintiff redacts that argument for confidentiality because it reveals details concerning how Defendants’ accused products work. Dkt. 92, 7:6-9. The same argument is already set forth in detail in Defendants’ Counterclaim for noninfringement, which was also filed under seal. *See*, Dkt. 33, Defendant’s Counterclaims ¶¶38-45. Defendants will not repeat those confidential details in the context of this claim construction brief. Nevertheless, the explanation provided in Defendants’ Counterclaim for noninfringement elucidates the nature of the parties’ dispute over the scope of the meaning of the term “quality assessment value.”

1 the “quality score may be displayed”), Fig. 4 (362, 364, 366 (“quality score prediction”). Thus,
2 Defendants submit that its proposed construction is an appropriate statement of the plain and
3 ordinary meaning of the claim language.

4 **V. CONCLUSION**

5 For the reasons addressed above, the Court should adopt Defendants’ proposed claim
6 constructions. Additionally, the Court should reject Plaintiff’s only proposed construction as
7 overly limiting.

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/s/ Jeffrey C. Metzcar

2 Marla R. Butler, *pro hac vice*
3 marla.butler@thompsonhine.com
4 Two Alliance Center
5 3560 Lenox Road Suite 1600
6 Atlanta, Georgia 30326-4266
7 Telephone: (404) 407-3680

8 Jeffrey C. Metzcar, *pro hac vice*
9 jeff.metzcar@thompsonhine.com
10 10050 Innovation Dr., #400
11 Miamisburg, OH 45342
12 Telephone: (937) 443-6841

13 Jesse L. Jenike-Godshalk, *pro hac vice*
14 Jesse.Godshalk@ThompsonHine.com
15 312 Walnut Street, Suite 2000
16 Cincinnati, Ohio 45202
17 Tel.: (513) 352-6700
18 Fax: (513) 241-4771

19 Andrew Himebaugh, *pro hac vice*
20 andy.himebaugh@thompsonhine.com
21 20 N. Clark Street, Suite 3200
22 Chicago, IL 60602
23 Telephone: (312) 998-4247

24 Jennifer Seraphine (State Bar No. 245463)
25 seraphine@turnerboyd.com
26 Vyson Hsu (State Bar No. 322336)
27 hsu@turnerboyd.com
28 TURNER BOYD SERAPHINE LLP
155 Bovet Road, Suite 750
San Mateo, CA 94402
Telephone: (650) 521-5930

*Attorneys for Defendants/Counterclaim-
Plaintiffs Caption Health, Inc. & GE
HealthCare Technologies Inc.*