

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3 CAPTION HEALTH, INC.,)
4)
5 Petitioner,) IPR2025-01422
6 vs.)
7 UNIVERSITY OF BRITISH) Patent No. 10,751,029
8 COLUMBIA,)
9 Patent Owner.)
_____)

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11
12 *** FIRST SESSION ***

13 VIDEOTAPED DEPOSITION OF
14 RAHUL C. DEO, M.D., PH.D.

15 FRIDAY, APRIL 17, 2026, 6:07 A.M. PT/9:07 A.M. ET

16 VIA ZOOM VIDEOCONFERENCE
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23 STENOGRAPHICALLY REPORTED BY:
24 CHERYL HAAB SCOTT, RDR, CRR, CCRR
25 CA CSR NO. 13600
WA CCR NO. 3499
NV CCR NO. 1003

UBC-2051
Caption Health v. University of British Columbia
IPR2025-01422

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3 CAPTION HEALTH, INC.,)
4)
5 PETITIONER,) IPR2025-01422
6 VS.)
7 UNIVERSITY OF BRITISH) PATENT NO. 10,751,029
8 COLUMBIA,)
9 PATENT OWNER.)
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13 VIDEOTAPED DEPOSITION OF RAHUL C. DEO, M.D.,
14 PH.D., taken via Zoom Videoconference, on Friday,
15 April 17, 2026, at 6:07 a.m. PT/9:07 a.m. ET, before
16 CHERYL HAAB SCOTT, RDR, CRR, CCRR, Certified Shorthand
17 Reporter No. 13600 in and for the State of California,
18 Certified Court Reporter No. 3499 in and for the State
19 of Washington, and Certified Court Reporter No. 1003 in
20 and for the State of Nevada.

A P P E A R A N C E S

--oOo--

For the Petitioner:

THOMPSON HINE LLP
BY: WILLIAM E. MANSKE, ESQ.
800 Nicollet Avenue, Suite 2850
Minneapolis, Minnesota 55402
612.605.5903
william.manske@thompsonhine.com

For the Patent Owner:

PERKINS COIE LLP
BY: CHRISTOPHER MARANDO, ESQ.
700 13th Street NW, Suite 800
Washington, District of Columbia 20005
202.654.6200
cmarando@perkinscoie.com

Also Present:

SOUFOU LEE, VIDEOGRAPHER

I N D E X

--oOo--

WITNESS: RAHUL C. DEO, M.D., Ph.D.

PAGE

Examination By Mr. Marando

6

INDEX TO EXHIBITS

--oOo--

(No exhibits were offered.)

1 FRIDAY, APRIL 17, 2026, 6:07 A.M. PT/9:07 A.M. ET

2 VIA ZOOM VIDEOCONFERENCE

3 --oOo--

4 THE VIDEOGRAPHER: Good morning. We are on
5 the record at 6:07 a.m. Pacific Standard Time.

6 Today's date is April 17, 2026. This is the
7 recorded remote video deposition of Dr. Deo in the
8 matter of Caption Health, Inc., versus University of
9 British Columbia, Case Number IPR2025-01422. This
10 deposition is being held via web conference.

11 My name is Soufou Lee. I'm the videographer
12 with Focus Litigation Solutions. The court reporter
13 is Cheryl Scott.

14 Counsel, please introduce yourselves and
15 state whom you represent, after which the court
16 reporter will swear in the witness.

17 MR. MARANDO: This is Chris Marando for the
18 Patent Owner, the University of British Columbia.

19 MR. MANSKE: Good morning. William Manske
20 of Thompson Hine for the Petitioner, Caption Health,
21 Incorporated.

22 THE WITNESS: Do I say me too?

23 MR. MARANDO: No, you don't need to.

24 THE COURT REPORTER: Good morning. My name
25 is Cheryl Scott. I am a California Certified

1 Shorthand Reporter and the deposition officer for
2 today's proceeding. My CSR license number is 13600.

3 --oOo--

4 Whereupon,

5 RAHUL C. DEO, M.D., Ph.D.,

6 having been called as a witness,

7 was duly sworn by the court reporter

8 and testified as follows:

9 --oOo--

10 THE COURT REPORTER: Counsel, can I have a
11 stipulation that I can, as a California CSR, report
12 the deposition with the witness seated in Boston?

13 MR. MARANDO: We so stipulate.

14 MR. MANSKE: As do we.

15 --oOo--

16 EXAMINATION

17 BY MR. MARANDO:

18 Q All right. So good morning. Could you
19 please state your name for the record. I'll ask
20 now.

21 A Rahul Deo.

22 Q Okay. And where are you today?

23 A Needham, Massachusetts.

24 Q Is anyone in the room with you?

25 A No.

1 Q And you have documents with you; is that
2 correct?

3 A Yes.

4 Q What documents do you have with you?

5 A I have a clean version of my declaration. I
6 have the '029 patent. I have the Krishnan patent.
7 I have the Aase patent, and I have Chan and Wu. So
8 all the primary art that I include in the
9 declaration as well as the declaration itself. And
10 the original patent.

11 Q Okay. Those are paper copies you have with
12 you; is that right?

13 A I do, yeah.

14 Q Okay. Do they have any markings on them?

15 A No.

16 Q All right.

17 A Freshly printed today.

18 Q Dr. Deo, have you been deposed before?

19 A No.

20 Q Have you testified at a trial before?

21 A No.

22 Q All right, well, since it's your first
23 deposition, and it's always good to run through
24 things, I'll just discuss a few kind of ground rules
25 that help make depositions go smoothly, and then

1 we'll start talking about the substance of why we're
2 here today.

3 So I'll do my best to ask clear questions.
4 If you don't understand a question, please let me
5 know. Otherwise, I'll assume you understood the
6 question.

7 Does that sound fair?

8 A Yes.

9 Q You're doing a great job of this: Please
10 allow me to finish asking my questions before
11 beginning your answer so that we can avoid speaking
12 over each other and keep the transcript clear.

13 Okay?

14 A Yes.

15 Q Please verbally answer all questions so the
16 court recorder -- court reporter, excuse me, can
17 record your response.

18 Okay?

19 A Yes.

20 Q There will be times, probably many times,
21 when I ask you to turn to a specific section of a
22 document. I'll ask that you'll let me know when
23 you're there and wait until I ask you a question
24 about the document before you talk about the
25 document.

1 Does that sound okay?

2 A So you mean, you'll first point where I
3 should go, and I will tell you I'm there, then
4 you'll ask the question and then I'll answer it. Is
5 that --

6 Q Precisely.

7 A Okay. Sure.

8 Q And counsel may object from time to time
9 today; however, you should still answer unless he
10 specifically instructs you not to answer.

11 Do you understand that?

12 A Yes, I understand it.

13 Q We will take breaks from time to time, but
14 just ask if you need a break. Generally, we'll take
15 a break around every hour. We'll take a break
16 essentially when you ask unless there's a question
17 pending, in which case I'll ask you to finish your
18 answer before we take a break.

19 Does that sound okay?

20 A Sounds good.

21 Q Is there any reason you cannot testify
22 truthfully and completely today?

23 A No reason.

24 Q So what did you do to prepare for your
25 deposition today?

1 A I reread the declaration. I reread all the
2 primary -- sorry, all the prior art. And I reread
3 '029. I read some of the supporting references that
4 I had in the declaration, and I did meet with
5 counsel for a couple of sessions to discuss.

6 Q Did you reread Krishnan, Aase, Chan, and Wu?

7 A Yes.

8 Q And you said you reread the '029 patent; is
9 that right?

10 A Yes.

11 Q Were there any other references that you
12 reviewed to prepare that you can recall
13 specifically?

14 A I sort of skimmed over Caruana, Donahue,
15 LeCun. That's about all I can recall.

16 Q What was the first one? Carabano?

17 A Caruana. Caruana is the multitask learning
18 from 1998. I also have a copy of the UBC
19 preliminary response, and so I wouldn't say I looked
20 at it in detail, but I do have a copy of that.

21 MR. MANSKE: Perhaps we can spell the
22 Caruana reference for Ms. Scott.

23 THE WITNESS: I'm sorry. Yes.

24 C-a-r-u-a-n-a. I think I can give you the
25 exhibit number. Give me a second.

1 MR. MARANDO: I believe it's Exhibit 1022.

2 THE WITNESS: Yup. You're right.

3 BY MR. MARANDO:

4 Q And then LeCun is L-e-C-u-n?

5 A Yes.

6 Q That's Exhibit 1027?

7 A Uh-huh.

8 Q And Donahue is D-o-n-a-h-u-e?

9 A That's 1021.

10 Q Exhibit 1021.

11 Okay. I think you said you've also reviewed
12 the patent owner preliminary response; is that
13 right?

14 A Yes. Well, not in detail, but I did look at
15 it, yes.

16 Q Okay. Are there any other documents besides
17 the patent owner preliminary response that are --
18 you know, you've reviewed since drafting your
19 declaration in -- related to this -- you know, the
20 subject matter here of your opinions?

21 A Not that I recall, no.

22 Q And you mentioned to prepare, you met with
23 your counsel, Mr. Manske; is that right?

24 A Mr. Manske and Mr. Metzcar, yes.

25 Q And when did you meet with your attorneys?

1 A Yesterday, Tuesday, and on one prior
2 occasion in the prior week. I didn't have a lot of
3 time.

4 Q So you met three days; is that right?

5 A I think it's three. Might have been four.
6 Might have had like a really -- it may have been an
7 intro session actually, so it might have been four.
8 Sorry about that.

9 Q Okay. Can you estimate how long you met to
10 prepare with your attorneys?

11 A The total amount of time, seven hours
12 meeting them.

13 Q Did you speak to anyone else about preparing
14 for your deposition today aside from the attorneys
15 we just mentioned?

16 A No.

17 Q All right. So when and how did you become
18 aware of Caption Health?

19 A I first learned about Caption Heath when
20 they were named Bay Labs and I was a professor at
21 UCSF and I met them at that point. I met their CEO
22 at that point. I was a bit of a computer vision
23 academic at the time, and so we had some kind of
24 scientific meeting at that point.

25 Q Do you know when that was, approximately?

1 A 2017, maybe. 2016, 2017.

2 Q So aside from consulting in this matter as
3 an expert witness, have you done any other work for
4 Caption Health?

5 A Yeah. There was a -- there was an IPR that
6 I think never -- I apologize. I don't know all the
7 legal words. I don't think the petition was ever
8 filed, but there was something back in -- I think it
9 was 2020, related to the Echo Nous patent. So
10 that -- yeah, that was, I think that was 2020.

11 Q So on your CV, which is Exhibit 1003, I do
12 see a reference to consulting for Caption Health
13 from January 2021 to April 2021. It's on page 3 of
14 your CV.

15 Does that sound right?

16 A That's this -- whatever, the IPR --

17 Q Okay.

18 A -- related to the Echo Nous patent.

19 Q Okay. Have you done any other work for
20 Caption Health unrelated to the IPR proceedings?

21 A No.

22 Q Have you ever received any -- withdraw that.
23 Have you ever received any funding from
24 Caption Health for any of your research?

25 A No.

1 Q Have you sought any funding from
2 Caption Health for any of your research?

3 A No.

4 Q Okay. I want to talk a bit about your
5 education, which is where we started right when I
6 joined.

7 A Yeah.

8 Q So you have a bachelor's in chemistry from
9 the University of Ottawa; is that right?

10 A That's right.

11 Q Then you have a Ph.D. in molecular
12 biophysics from the Rockefeller University; is that
13 right?

14 A Uh-huh.

15 Q And you also have an M.D. from Weill Cornell
16 university medical college; correct?

17 A That's right.

18 Q All right. So are those advanced degrees,
19 are those degrees related to computer imaging?

20 A The biophysics Ph.D. involved coursework in
21 computer vision and a reasonable amount of machine
22 learning for data analysis. Most of my sort of
23 heavy duty research in computer vision started
24 around 2014 to 2021, where I was a faculty member.
25 But sort of the quantitative base was laid out in

1 the Ph.D. and in my post-doc in machine learning.

2 Q So you began most of the heavy duty
3 research, you said in computer vision, starting
4 around 2014; is that right?

5 A That's right. Yeah. And the base was
6 there. But the -- sort of more of the applications
7 were being done at that time. Yes.

8 Q And just to confirm: You don't have an
9 advanced degree in computer electrical engineering;
10 is that right?

11 A Not in computer electrical engineering, no.
12 From the standpoint of the POSITA, I had included
13 the -- the -- I see the biophysics and physics
14 degree as being equivalent, but not in computer
15 science or computer engineering, no.

16 Q All right. So did Rockefeller University
17 have a physics department when you were attending?

18 A They did, yes.

19 Q And just to make sure I understand: Do they
20 offer a Ph.D. in physics, just the name "physics"?

21 A I don't know. I'm not sure whether they
22 offered that. There are sort of concentrated
23 faculty members in different areas so they had
24 physicists on faculty, mathematicians on faculty.
25 I'm not sure whether there is a degree called a

1 degree in physics there.

2 Q I've seen references to the Rockefeller
3 University graduate program as a program in
4 bioscience. Was that -- does that sound right to
5 you?

6 A It was a strange place. There were particle
7 physicists there who would work at sort of
8 synchrotron colliders doing deep particle physics.
9 There were mathematicians doing pure math.
10 Complexity scientists. So I don't -- I feel like it
11 was a -- it's a very heterogeneous place. Whether
12 or not it's changed since then, I don't know. But
13 it sort of prided itself back in the late '90s,
14 early 2000s as having really a large heterogeneous
15 group of people across a realm of research areas,
16 some who would look not at all like biology and some
17 that were more applied towards biology.

18 Q So you said that some of your coursework,
19 this was for the Ph.D. specifically was --

20 A Yup.

21 Q -- related to computer vision; is that
22 right?

23 A Yup. Yup.

24 Q Do you recall what the courses were?

25 A I don't know the names of the courses. I

1 don't actually remember the names of the courses. I
2 wanted to take as much math as I could at the time.
3 But no, I don't remember the names.

4 Q Do you recall if that work related to
5 computer vision related to training machine learning
6 models?

7 A I don't recall whether the courses were
8 focused on that. The computer vision would
9 definitely have some degree of machine learning
10 models in it. I don't remember the exact sort of
11 syllabus or the actual classes that were related to
12 it.

13 Q When did you start doing research on
14 training machine learning models to analyze
15 ultrasound data?

16 A That would be around 2014.

17 Q Okay. And can you describe what you started
18 doing in 2014, just briefly?

19 A Yeah. At that time, I wanted to build an
20 end-to-end pipeline to analyze echocardiogram data,
21 including view classification, estimation of
22 quantitative parameters, disease detection, so that
23 was -- the goal was to automate all of those
24 processes.

25 Q Did that work culminate in publishing, you

1 know, your results?

2 A Yeah, the first paper was on archive in
3 2017. The next one -- then that was actually
4 published in a journal, 2018. It's been cited over
5 a thousand times. And then there were probably five
6 -- or four or five additional manuscripts in that
7 space. In addition, multiple grants were awarded to
8 conduct that work.

9 Q What was -- withdraw that.

10 So you mentioned that was an end-to-end
11 system; is that right?

12 A Yeah. I'm using "end to end" in a different
13 parlance than the idea that it was trained as one
14 giant consecutive neural network, meaning that
15 taking a kind of original DICOM level imaging data
16 and outputting as one of the sort of outputs kind of
17 disease detection -- yes/no estimates of kind of
18 parameters, volumes, function, and then -- you know,
19 what you need to do is kind of a bridge in there is
20 to be able to classify the views of the images so
21 that was part of it too.

22 Q Can you spell "DICOM"?

23 A D-I-C-O-M. Sorry about that. It's just the
24 sort of standard loosely defined standard format for
25 image storage.

1 Q Now, were you familiar in 2014 with
2 techniques for extracting features that included
3 segmentation?

4 A I trained segmentation models at that time.
5 So yes.

6 Q So this was in 2014, you trained models to
7 do segmentation. Is that what you said?

8 A Yeah. I think -- yeah, the exact start
9 date, I don't know if it was 2014 or 2015, I don't
10 recall. But yeah, that was sort of the start of the
11 work was focusing on segmenting the left ventricle
12 from echocardiogram images.

13 Q How about filtering? Were you working on
14 filtering techniques?

15 A I don't know what -- I mean, filtering, to
16 me, is a little vague as to what exactly it means.
17 So I don't really know what that kind of phrase
18 means. Sometimes it's used as being that one can
19 apply a convolution to an image and extract some
20 information from it. But no, I've not -- I don't
21 think I went out of my way to do filtering, whatever
22 that -- that means.

23 Q Okay. Are you familiar with what the
24 techniques for segmentation and filtering were, you
25 know, when you were doing your Ph.D.?

1 And I guess you -- you obtained your Ph.D.
2 in 2001?

3 A Yeah.

4 Q Were you familiar with what the techniques
5 for segmentation and filtering were then?

6 A I wasn't as active in the field then, but, I
7 mean, sort of in retrospect looking at the
8 references, certainly there were neural
9 network-based segmentation techniques at that time.
10 I'm not sure exactly what else other than neural
11 networks were being used for that.

12 Q So you're relying on the references here to
13 say that there were neural network techniques for
14 segmentation and filtering; is that right?

15 MR. MANSKE: Object to form.

16 THE WITNESS: Meaning the literature review
17 would show that there are neural network techniques
18 being applied for segmentation that were being
19 published then; but since I wasn't actively working
20 in the field doing segmentation at the time, I
21 wasn't using them.

22 BY MR. MARANDO:

23 Q What references are you referring to that
24 were published in 2001 that referred to segmentation
25 and filtering and associated that with neural

1 networks techniques?

2 A I don't have the references in front of me,
3 but there were multiple articles that I found to
4 that purpose.

5 Q Are they references that you're relying on
6 in this IPR?

7 A No.

8 Q Are they references that are exhibits in
9 this IPR?

10 A No.

11 Q So did you -- how did you become aware of
12 these references?

13 A I searched in the literature to find
14 references for computer science papers.

15 Q When did you do that?

16 A I've done that -- I mean, scattered over the
17 course of the last few months just to understand
18 sort of the history that's been there.

19 Q So over the last few months, you've located
20 some references that aren't exhibits here that you
21 believe disclose segmentation and filtering as being
22 neural network techniques as of 2001; is that right?

23 A Yeah. Yeah.

24 Q Are you relying on those for your opinions?

25 A No. The way that the -- and it's sort of

1 stated in declaration. What I was told to do and
2 you can see this in paragraph 35, page 12, was that
3 the -- my assumption was that what was relevant was
4 the POSITA's understanding at the time of the
5 priority date of the '029 patent. So whether or not
6 there were references prior to 2005 or subsequent to
7 was not actually my priority at that time. Just --
8 I'm just aware that such references exist.

9 Q Are you intending to rely on those in this
10 IPR as a, you know, support for your opinions? I'm
11 just trying to understand.

12 A No, I'm not adding --

13 MR. MANSKE: Objection to form.

14 THE WITNESS: Sorry. I'm not adding any new
15 references. I'm just answering your question. I'm
16 not adding any new references in regards to this
17 deposition for an explanation of my opinion.

18 BY MR. MARANDO:

19 Q So you said that you applied this
20 understanding that what was relevant was the
21 POSITA's understanding at the time of the priority
22 date of the '029 patent --

23 A Yeah.

24 Q -- is that right?

25 A Yeah. Yeah, I don't think my opinions are

1 any different. Had another interpretation been
2 required that it was references prior to 2005, but
3 how I prepared this was definitely using the
4 priority date of the '029 patent as the -- in the
5 framing.

6 Q Okay. And that's in 2018; right?

7 A Yeah. Uh-huh.

8 Q So did you apply that understanding when you
9 were interpreting what Krishnan meant when it
10 disclosed that known segmentation and filtering
11 techniques can be used for feature extraction?

12 A Yeah, I guess what I'm saying is that I
13 applied the -- as written, the priority date at
14 August 31st, 2018; however, my opinion would have
15 been the same had I been forced to apply a 2005
16 priority date for that. It just, I mean, they would
17 have been the same opinion, but to be honest, what
18 was done in the declaration was applied on
19 August 31st, 2018, for framing the -- what a POSITA
20 would know.

21 Q You haven't cited anything here -- just to
22 be clear, I know we've talked about some things
23 you've looked at. You haven't cited anything here
24 that discloses neural networks for segmentation and
25 filtering to extract features; right?

1 MR. MANSKE: Object to form.

2 THE WITNESS: LeCun is a -- LeCun 1990 is a
3 neural network applied to images that performs
4 feature extraction and classification, but there's
5 no explicit segmentation or filtering in that paper.
6 I don't think any of the references here focus on
7 segmentation or filtering. I also don't think
8 that -- I mean, ultimately, that I believe the
9 passage you're referencing to is 34 in Krishnan, and
10 that's just one set of possible things features
11 could do that were extracted.

12 BY MR. MARANDO:

13 Q Okay. So you mentioned LeCun. That's a
14 reference that doesn't talk about segmentation and
15 filtering; is that right?

16 A Yeah, I don't think it talks directly about
17 segmentation or filtering.

18 MR. MANSKE: Maybe we can take a moment to
19 just make sure the spelling on that is right for
20 Ms. Scott.

21 THE WITNESS: I think we got that one
22 already.

23 L-e-C-u-n. That one is exhibit -- I think
24 we talked about that one already. That was one of
25 the ones I read. 1027. L-e-C-u-n with a capital C.

1 BY MR. MARANDO:

2 Q Is there any other reference that you're
3 relying on in your declaration that discloses, as of
4 2005, segmentation and filtering with a neural
5 network?

6 A No. I'll just double-check, but I don't
7 think so. I didn't see the segmentation and
8 filtering specifically as being essential, so I did
9 not hunt down references towards that end. I don't
10 see any of those that bring that up directly that
11 predated 2005.

12 Q And can you name any of the others that
13 you've looked at since that you believe disclose
14 segmentation and filtering?

15 A I don't remember the exact author names and
16 dates.

17 Q Can you describe the process you went
18 through when preparing your expert declaration which
19 is Exhibit 1002?

20 A Yeah, it was a little while ago. But I met
21 with Mr. Manske and Mr. Metzcar and met several
22 times and sort of planned out a strategy. I looked
23 up a lot of the primary references myself. I wrote
24 the background myself. Found the Chan reference.
25 And then they did do the -- I'm not a lawyer, so I

1 don't think I write the way that needs to be written
2 for an IPR, but they did a preliminary draft. But
3 then I ended up rewriting sections in my own words
4 and doing sort of substantial edits of the original
5 draft. That was the sequence, if I'm remembering
6 correctly.

7 Q Do you recall when you first started working
8 on the declaration?

9 A No, I don't recall exactly when it was. It
10 must have been -- yeah, everything's a blur these
11 days. Yeah, I don't actually remember because I
12 might even get the year wrong -- but might have
13 been -- it was February or March of some year. But
14 it's a little bit of a blur as to exactly -- there's
15 this long hiatus that took place. Might have been
16 -- I think it was 2025. 2025, approximately a
17 couple of months of work and then there was this
18 sort of hiatus, it seems like, and then things sort
19 of have resurfaced.

20 Q So you mentioned that you drafted the
21 technology background; is that right?

22 A Yes.

23 Q And then you rewrote sections?

24 A Yes.

25 Q Does that apply generally or are there any

1 sections in particular that you rewrote?

2 A It was general. I don't remember exactly,
3 but I sort of generally had an opinion in a lot of
4 different places. So I don't remember exactly where
5 it was.

6 Q Ballpark, do you know approximately how long
7 you spent working on the declaration?

8 A I think somewhere between 20 and 30 hours
9 total.

10 Q Is there anything in your declaration
11 that -- I know you said you've reviewed it in
12 preparing for today's deposition. Is there anything
13 that you noticed was in error or that you want to
14 change?

15 A No.

16 Q Can you turn to paragraph 3, please, of
17 Exhibit 1002, which is your declaration.

18 A Yes, I'm here.

19 Q Okay. You can just review that to yourself.
20 Don't have to read it out loud, but just let me know
21 when you've read paragraph 3.

22 A I've read it. Yup.

23 Q So you state that Claims 1 through 30 would
24 have been obvious.

25 Do you see that?

1 A Yes.

2 Q Was that an error when you said Claims 1
3 through 30 would have been obvious?

4 A I don't think it's an error. There are --
5 in the claims table, it's sort of broken down in
6 terms of where there's anticipation versus what's
7 obvious. But that's -- so I don't think that the
8 word is an error in itself, but sort of the nuances
9 around exactly how each claim is addressed by the
10 prior art is provided in greater detail elsewhere.

11 Q Okay. So the reason why I'm asking is
12 because I understand that your opinion is that for
13 certain claims, they're anticipated by Krishnan; is
14 that right?

15 A Yes.

16 Q Okay. And for those claims that you have an
17 opinion that are anticipated by Krishnan -- and
18 these are Claims 1, 2, 11, 21 through 22, 29 and
19 30 -- I don't believe I saw an opinion that those
20 claims were obvious over Krishnan.

21 Is that your understanding as well?

22 A Yeah, they're anticipated. Yeah, the
23 correct term is used in the -- on page 52 is
24 anticipation. I'm not a lawyer, so I don't have all
25 of these distinctions; but at the same time, I think

1 that there was a -- there's a clear division between
2 those that are anticipated and those that are
3 obvious.

4 Q And so, you know, I'm not trying to be
5 tricky on this, really. I just want to understand
6 your opinion of it is not at all, of Claims 1
7 through 30 are obvious for certain claims, and we
8 can look at them specifically. But for certain
9 claims, your opinion is that they are anticipated
10 only; right?

11 A That's correct. Yup.

12 Q Okay. Could you turn to paragraph 20.

13 A Yes. I'm here.

14 Q Do you see where you said that you have not
15 been asked to offer an affirmative opinion on claim
16 construction?

17 A Yes.

18 Q So you do not have any affirmative opinions
19 on claim construction; is that correct?

20 A I do.

21 Q And then, I want to look at paragraphs 21
22 through 22, please.

23 A I'm there.

24 Q So this is your section on anticipation;
25 correct?

1 A 21, yup. Yup.

2 Q 21 and 22; right?

3 A Well, yeah, that's true. Yeah.

4 Q And this is the anticipation standard you
5 were given to apply in this IPR; is that right?

6 A That's correct.

7 Q And you state that both inherency and
8 equivalence may also influence whether a claim is
9 anticipated.

10 Do you see that?

11 A Yes.

12 Q And then you also explain that equivalence
13 means that a disclosure may anticipate if it is
14 interchangeable with a claim element or -- withdraw
15 that and start over.

16 So you explain that equivalence means a
17 disclosure may anticipate if it is interchangeable
18 with a claim element under a Function-Way-Result
19 Test or if an ordinarily skilled artisan would have
20 recognized said interchangeability.

21 Is that your opinion here?

22 A Sorry. Let me come back to that.
23 One second.

24 Sorry. Can you repeat that? Are you
25 reading exactly what's written here?

1 Q I'm trying to understand the opinion. So,
2 you know, I guess I'll reread it or I'll say it
3 again. And if you -- I'm wondering if you agree or
4 disagree with what I'm saying here. So I'll say it
5 again.

6 Okay?

7 A Yup.

8 Q You explain that equivalence means a
9 disclosure may anticipate if it is interchangeable
10 with a claim element under a Function-Way-Result
11 Test or if an ordinarily skilled artisan would have
12 recognized said interchangeability.

13 Is that an accurate summary of --

14 A Why did you introduce new wording for the
15 function? Like, what were you saying there, I
16 didn't understand. You said something that wasn't
17 written here.

18 Q Yeah, so the Function-Way-Result Test is a
19 test for equivalence; and essentially that's what
20 you're saying here, I believe, that a reference
21 disclosure may have been made interchangeable if you
22 have elements that perform substantially the same
23 function and substantially the same way to achieve
24 substantially the same result.

25 Do you see that?

1 A Yup.

2 Q So that's one way to show equivalence.

3 That's the instruction you were given; right?

4 A Yeah --

5 MR. MANSKE: Objection. Form.

6 BY MR. MARANDO:

7 Q And so the standard you applied in this IPR
8 was that an element that is equivalent can
9 anticipate if it satisfies that -- what I'm calling
10 the Function-Way-Result Test, which is what you
11 wrote about -- you know, substantially the same
12 function, substantially the same way, substantially
13 the same result; is that right?

14 MR. MANSKE: Objection. Form.

15 THE WITNESS: So that's one way one can
16 reach -- one can anticipate. And that's not the
17 only way, but that is one way.

18 BY MR. MARANDO:

19 Q And you also say that another way of
20 demonstrating equivalence which -- of a disclosure
21 which can -- then can anticipate is that an
22 ordinarily skilled artisan would have recognized the
23 interchangeability; is that right?

24 A You're using "interchangeability" here now
25 as a new term or because -- I thought we just talked

1 about equivalence.

2 Is that something else you're saying now?

3 Q So there's two -- this is from your
4 declaration, the last sentence, I guess, of
5 paragraph 22.

6 A Yup.

7 Q So you identify two ways to identify whether
8 something's interchangeable; and therefore, the
9 disclosure is equivalent and can anticipate. And
10 one is the Function-Way-Result Test. And then you
11 also say:

12 "Or showing that an ordinarily skilled
13 artisan would have recognized said
14 interchangeability."

15 Do you see that?

16 A Yup.

17 Q So those are two ways to show equivalence
18 which you understand and apply to this IPR as, you
19 know, sufficient to show that an element is
20 anticipated; right?

21 A Yes, equivalence is one way to do that, and
22 that would fit the definitions of equivalence. Yes.

23 I mean, I was using the sort of 21 as being
24 the -- my sort of definition of anticipation that I
25 was using. Single prior art disclosed as each and

1 every element of the claim subject matter arranged
2 in substantially the same way that a person of
3 ordinary skill could practice the patent and
4 understand such a claim is said to be anticipated by
5 said prior art references.

6 Q Did you also apply the standard that you put
7 forth in paragraph 22?

8 A I didn't use equivalence and inherency, if I
9 remember correctly, directly in the -- we'll go
10 through things in detail. But I don't believe I've
11 used those words. But if we do come across it, then
12 yes; but I don't think I've used those terms.

13 Q Sure. But the anticipation standard you
14 applied here is the standard that you set forth in
15 paragraph 21 and 22; is that right?

16 A That's correct. Yes.

17 Q Can you look at paragraph 26, please.

18 A Yes.

19 Q So here in paragraph 26, you state that it's
20 your understanding that an obviousness determination
21 can be based on a single prior art reference, a
22 combination of multiple prior art references, or a
23 combination of prior art references in the
24 patentee's admissions regarding the scope and
25 content of the prior art.

1 Do you see that?

2 A I see that. Yup.

3 Q So that's the obviousness standard you
4 applied in paragraph 26. You applied that in this
5 IPR; is that right?

6 A That's correct. Yes.

7 Q All right.

8 A The obviousness determination is in
9 paragraph 25. 26 describes how one can get there
10 with prior art.

11 Q Okay. So for purposes of your analysis, you
12 were applying, you know, both 25 and 26, and you
13 were assuming that you could -- obviousness could be
14 demonstrated based on a combination of prior art in
15 the patentee's admissions; is that right?

16 A Yes.

17 Q Can you look at paragraph 29, please.

18 A Yes.

19 Q And you state here that you understand that
20 a patentee's admissions regarding the scope and
21 content of the prior art can be used to supply
22 missing claim limitations that were generally known
23 in the art prior to the effective filing date of the
24 claimed invention.

25 Do you see that?

1 A I want to -- I want to see the -- one sec.

2 Q So what are you looking for?

3 A Oh, I just want to see that the -- that
4 where did "patentee" get defined? That's all I'm
5 looking for. I guess I'm trying to make sure is
6 that there's clarity as to the -- which patent is
7 being discussed when the word "patentee" is being
8 used.

9 Q I interpreted that as in this case that
10 would be the '029 patent, the patentee of the '029
11 patent.

12 Is that the understanding you applied?

13 A That makes sense to me. Yes. I don't
14 believe I used the patentee's admissions, but we can
15 come to that when we get there.

16 Q Okay. You're not sure if you used the
17 patentee's admissions to supply missing claim
18 limitations that were generally known in the prior
19 art?

20 A I don't remember ever using that explicitly,
21 but obviousness I was primarily using the POSITA's
22 understanding as well as the direct text of the
23 prior art. So that's all I'm saying here.

24 Q Okay. Do you stand by paragraph 29, that
25 that's your understanding of one way to show

1 obviousness that you can rely on admissions to
2 supply missing claim limitations?

3 MR. MANSKE: Object to form.

4 THE WITNESS: I mean, yeah, I'm not going to
5 contradict what has been written here.

6 BY MR. MARANDO:

7 Q You applied that understanding in this IPR;
8 right?

9 MR. MANSKE: Object to form.

10 THE WITNESS: I -- like I said, I don't
11 recall whether there was any need for that. So as
12 introductory material, I agree this is a possible
13 source of material for obviousness.

14 BY MR. MARANDO:

15 Q But you don't recall whether you used that
16 in the grounds; is that right?

17 A That's correct. Yeah.

18 MR. MARANDO: How are you doing? Do you
19 want to take a break or...

20 (Discussion off the record.)

21 THE VIDEOGRAPHER: The time is 7:02 a.m.
22 We're off record.

23 (Recess.)

24 THE VIDEOGRAPHER: The time is 7:13 a.m.
25 We're back on the record.

1 BY MR. MARANDO:

2 Q All right. Could you please turn to
3 paragraph 62 of your declaration.

4 A All right, I am there.

5 Q All right. You state in paragraph 62 --
6 well, first of all, paragraph 62 is a description of
7 the '029 patent; right?

8 A Paragraph 62. Paragraph 62 is one of the
9 descriptions -- or one of the paragraphs supporting
10 the description of the '029 patent.

11 Q Sure.

12 A Yes. That is what its purpose is.

13 Q Okay. And you state that the '029 patent
14 discloses and claims an echocardiographic image
15 analysis workflow shown in figure 3; right?

16 A Yes.

17 Q So it's your opinion that figure 3 shows the
18 echocardiographic image analysis workflow claimed in
19 the '029 patent; is that right?

20 A That's correct, yes.

21 Q Figure 3 of the '029 patent includes blocks
22 202, 204, 206, 208, and 210; correct?

23 A Yes.

24 (Reporter clarification.)

25 THE WITNESS: I was just -- I was just

1 agreeing and I was trying to figure out where 200
2 was being referred to. Is it -- whether it is
3 the -- the parent for the entire block or not. I
4 don't know -- it's actually probably not relevant so
5 we can keep going.

6 200 is the flowchart. So yeah, it is sort
7 of the whole thing.

8 BY MR. MARANDO:

9 Q That's right. And I'm just asking about the
10 blocks of the flowchart that is 200. So it's 202,
11 204, 206, 208, and 210 are the blocks in the
12 flowchart; right?

13 A That's correct.

14 Q Block 202 is "Received signals representing
15 a set of ultrasound images."

16 Do you see that?

17 A That's correct. Yeah.

18 Q The next block is 204, which is "Derive one
19 or many extracted feature representations from the
20 set of ultrasound images."

21 Correct?

22 A That's correct.

23 Q And then you state that at blocks 204, 206,
24 and 208, "The workflow utilizes at least one neural
25 network which is trained to perform each of the

1 disclosed functions with the ultimate goal of
2 generating an output of a quality assessment value
3 and an image property which in some embodiments may
4 be a view category."

5 Do you see that?

6 A Yeah. I think that's just taken directly
7 from the '029 patent. But yeah, that's just kind of
8 text excerpted. But I see that. Yeah.

9 Q It's not a quote; right? At least not the
10 whole thing?

11 A Let me just double-check that just to be
12 sure. I think you're probably right. I just want.

13 To match up -- sorry, just want to match up
14 directly to the text that is relevant just to make
15 sure.

16 Q So what part of the patent are you looking
17 at now?

18 A I'm just matching up to the text. So that
19 -- remember the 96410813550 just to make sure.
20 Because you're correct it's not a direct quote, so I
21 just want to make sure that it is accurately
22 describing what the source patent has...

23 Yeah. So I see that -- that this is one
24 embodiment of what that flowchart would be. That's
25 what that description is. The '029 patent is more

1 vague on what exactly are the pieces that go into
2 202, 204, 206, 208, 210. So that text really
3 describes one embodiment of how it could be
4 implemented.

5 Q Okay. So let's, I guess -- that wasn't --
6 that took a little while. So let's summarize. All
7 right?

8 A Yeah.

9 Q So you state at blocks 204, 206, and 208:
10 "The workflow utilizes at least one neural
11 network which is trained to perform each of the
12 disclosed functions with the ultimate goal of
13 generating an output of a quality assessment value
14 in an image property which in some embodiments may
15 be a view category."

16 Do you see that?

17 A I see the text written there, yeah. I'm
18 just saying that that text is one embodiment of what
19 that flowchart is. That flowchart itself is not
20 explicitly saying anything about whether or not it's
21 a neural network. It's just -- it's broader than
22 that; but that is the text there is describing one
23 embodiment of what that flowchart is showing.

24 Q So do you want to change that sentence?

25 A Later on, there's a -- actually, let me see.

1 No, I think because the prior text is clear that
2 this is --

3 (Reporter clarification.)

4 THE WITNESS: I'm sorry.

5 I'm just saying that the text is clear
6 because the prior line is that the flip figure at 3
7 is a flowchart depicting blocks of code for
8 directing the analyzer of the system to perform
9 image analysis functions in accordance with various
10 embodiments of the disclosure. In that context,
11 yes, that is the subsequent sentence, is describing
12 some embodiments of the disclosure.

13 So no, I don't need to change the sentence.
14 That's fine as-is.

15 BY MR. MARANDO:

16 Q Well, so figure 3, you're saying -- let me
17 make sure I understand. So -- at blocks 204, 206,
18 and 208, you said that the workflow utilizes at
19 least one neural network; right?

20 A In some embodiments, yes, of the disclosure.
21 That's correct.

22 Q You didn't say in some embodiments. You're
23 saying that now; right?

24 A No, I'm reading the sentence right prior to
25 that.

1 Q The sentence prior to that says:

2 "Figure 3 is a flowchart depicting blocks of
3 code for directing the analyzer 12 of the system of
4 figure 1, shown above to perform image analysis
5 function in accordance with various embodiments of
6 the disclosure."

7 Right?

8 A Yup. That's what it says.

9 Q Okay. Blocks 204, 206, 208, and 210, are
10 those all elements of figure 3 that are performed
11 according to various embodiments of the disclosure?

12 A Yeah. Those -- that's sort of the general
13 backbone of the disclosure is that these are the
14 steps that are required in the workflow.

15 Q And you said these steps use a neural
16 network; right?

17 A In some embodiments, yeah, that's the
18 distinction in the prior sentence.

19 Q Can you identify any embodiments that don't
20 use a neural network?

21 A All I'm saying is that the '029 patent in
22 referring to figure 3, does not indicate specific
23 statements regarding what are the embodiments for
24 204, 206, 208, 210, in other places in '029, they
25 need to talk about neural networks in accordance

1 with lining up with certain claims that restrict the
2 limitation to neural networks.

3 So yeah, there are no other machine learning
4 methods that are described. But it's left somewhat
5 vague as to what else could be there.

6 Q So you've reviewed the '029 patent; right?

7 A I have.

8 Q Have you identified any embodiments that do
9 not use a neural network for blocks 204, 206, and
10 208?

11 A There are no -- there are no specifically
12 named embodiments. The exemplar that is given is
13 the neural network. There are no alternative
14 embodiments that are also stated explicitly.

15 Q Can you -- or have you identified any
16 description in the '029 patent of performing block
17 204 other than with a neural network?

18 A There -- like I said, there are no specific
19 alternatives given in '029. It is left to the user
20 to imagine if there are any. But there are none
21 specifically given.

22 Q So the only specific descriptions in block
23 204 employ a neural network. Is that fair?

24 MR. MANSKE: Objection. Form.

25 THE WITNESS: The '029, the only specific

1 embodiments that they describe involve a neural
2 network. They say in some embodiments and refer to
3 neural networks. They do not say what else would be
4 done in the other embodiments.

5 BY MR. MARANDO:

6 Q What other embodiments are you talking
7 about?

8 A I'm just saying that there is a general
9 statement being made in '029 that this is the
10 flowchart that is described in Claim 1. When they
11 do get into specific embodiments, they mention that
12 there are -- there are various embodiments, some of
13 which are neural networks. I would expect a POSITA
14 would read that there are other embodiments that are
15 not in neural network that have not been stated.

16 Q So you said there's a general statement
17 being made in the '029 that this flowchart which is
18 figure 3, you know, shown in figure 3, that's
19 describing the claimed invention, for example, of
20 Claim 1; is that right?

21 A Yeah, let me just double-check. That is
22 exactly -- that's what I understood, but let me just
23 double-check that it's exactly how you...

24 Getting to the preamble.

25 So yeah, I don't even know whether figure 3

1 is even referred to. Give me a second. Yeah, so
2 figure 1 is the -- is the -- sorry. I feel like
3 it's a little bit confused. Let me break this up.

4 Okay. So what I will say is even though it
5 does not look like they refer to figure 3 as
6 supporting the workflow described in Claim 1, I
7 personally, looking at that, look like it does match
8 up with the workflow described in Claim 1. They do
9 mention right before that:

10 "While specific embodiments" --

11 (Reporter clarification.)

12 THE WITNESS: -- "of the disclosure have
13 been described and illustrated, such embodiments
14 should be considered illustrative of the disclosure
15 only and not as limiting the disclosure as construed
16 in accordance with the accompanying claims."

17 And my summary, then, is Claim 1, the steps
18 described there do match up with the steps shown in
19 figure 3. But at least the way that '029 has been
20 written, neural networks would represent one
21 possible embodiment of that, but they do not want to
22 limit themselves to that.

23 Sorry, that was long, but that's -- that is
24 my sort of assessment of that figure and the way it
25 is being used in '029 and how the POSITA would

1 understand it.

2 You okay, Cheryl? Okay.

3 BY MR. MARANDO:

4 Q Where are you reading from when you said the
5 last part of your answer there, that -- withdraw
6 that.

7 So you said "such embodiments should be
8 considered illustrative of the disclosure only and
9 not limiting," where are you reading from?

10 A That is in the preamble right, oh, sorry.
11 Let me refer -- so 23. What are these, columns?
12 Column 23. And it's between 25 and 30. It's right
13 before the claims are listed.

14 Q Do you stand by the statement in
15 paragraph 62 that the patent being the '029 patent
16 discloses in claims an echocardiographic image
17 analysis workflow shown in figure 3?

18 A Yeah, I -- I stand by that.

19 MR. MANSKE: Object to the form of that
20 question.

21 Continue.

22 BY MR. MARANDO:

23 Q Is there anything in paragraph 62 of your
24 declaration that you want to change?

25 A I don't want to change it. I just wanted to

1 make it clear that the subsequent sentence should
2 not be construed as being a description of an
3 obligate nature of figure 3, only as some
4 embodiments. It's the wording, a little bit clumsy
5 there, but the wording, I do think, supports that.

6 Q So when you said:

7 "At blocks 204, 206, and 208, the workflow
8 utilizes at least one neural network which is
9 trained to perform each of the disclosed functions,
10 with the ultimate goal of generating an output of a
11 quality assessment value and an image property which
12 in some embodiments may be a view category," are you
13 revising that, or are you standing by that
14 statement?

15 A That -- I'm not changing the statement. I'm
16 just explaining the statement being that it matches
17 up with some embodiments of figure 3.

18 Q So you want to add to that sentence that if
19 the workflow in some embodiments --

20 A I don't want to change the sentence. I'm
21 just explaining the way -- I'm just explaining the
22 sentence. I have no interest in changing the text.

23 Q Okay. So you stand by that statement; is
24 that right?

25 A I am explaining how -- what the statement

1 means, and I stand by my explanation.

2 Q And you stand by the statement; right?

3 A I stand by the explanation. Just want to
4 make sure the statement is not misconstrued so my
5 understanding of the statement, I have explained to
6 you. And I stand by that explanation. If somebody
7 else wants to read it differently, I can't stand by
8 their interpretation.

9 Q I'm only asking if you're revising the
10 statement or not. If you're not, then we can move
11 on.

12 A Okay. I'm not revising the statement.

13 Q Can you turn to paragraph 76, please.

14 A Yes.

15 Q So this is a section regarding your opinions
16 regarding claim construction; is that right?

17 A That is true. Yeah.

18 Q And is it correct that except for means-plus
19 function terms, you have interpreted all terms as
20 having their ordinary and customary meaning?

21 A That is correct, yes.

22 Q And then in paragraph 79, do you see that?

23 A Yes.

24 Q So this is your means-plus function
25 understanding related to a claim element of

1 Claim 30; is that right?

2 A That is correct. Yup.

3 Q And you've interpreted that limitation,
4 which is, quote, "Means for deriving one or more
5 extracted feature representations from the set of
6 ultrasound images, as a means-plus function claim
7 limitation and the corresponding structure algorithm
8 identified in the specification for performing the
9 recited function is a processor in memory operating
10 a neural network."

11 Is that right?

12 MR. MANSKE: Object to form.

13 THE WITNESS: I was told that Petitioner and
14 Patent Owner had come together, agreed upon that
15 definition, and so I -- I -- my opinion was in
16 response to that agreement. So I did what I was
17 told.

18 BY MR. MARANDO:

19 Q That's the interpretation you have applied.

20 Fair?

21 A To 30B, yes.

22 Q So let's move forward to paragraph 102.

23 A Yes.

24 Q And does this paragraph, paragraph 102, does
25 that summarize your overall invalidity opinions in

1 this IPR?

2 A It does, yes.

3 Q And your opinion includes grounds A, B, C,
4 and D; right?

5 A That's correct.

6 Q And in ground A, your opinion is that
7 Krishnan anticipates Claims 1 through 3, 9, 11, 21
8 through 22, 27, 29, and 30; right?

9 A That's correct.

10 Q And then in grounds B and C, you have
11 opinions that Claims 3, 9, and 27, are obvious,
12 which you also had opinions that they were
13 anticipated; is that right?

14 A That's correct. Yeah.

15 Q So then for Claims 1, 2, 11, 21 through 22,
16 29 and 30, your only opinion in this IPR is that
17 Krishnan anticipates those claims; right?

18 A That is correct.

19 Q All right. So I want to talk about
20 Krishnan, which is Exhibit 1005. So you have a copy
21 of that; right?

22 A I do, yes.

23 Q Can you review figure 1. Let me know when
24 you're there.

25 A I'm there.

1 Q All right. So figure 1 shows a block
2 diagram of Krishnan's system for providing automated
3 decision support for medical imaging; is that
4 correct?

5 A Sorry. What did you say?

6 Q Figure 1 is a block diagram of Krishnan's
7 system for providing automated decision support for
8 medical imaging; is that right?

9 A That's correct. Yeah.

10 Q And within figure 1, there's a -- which is
11 showing Krishnan's system, there's a data processing
12 model 101; is that right?

13 A That's correct. Yeah.

14 Q And then the data processing module 101
15 comprises an automatic feature analysis module 102;
16 an anatomy identification module 103; a view
17 identification module 104; and an image quality
18 assessment module 105.

19 Is that right?

20 A That's correct.

21 Q So each of these modules perform a separate
22 function; is that correct?

23 A Yes, that's correct.

24 Q Can you turn to paragraph 17 of Krishnan,
25 please.

1 A I'm there.

2 Q So Krishnan explains that:

3 "Feature analysis module 102 implements a
4 method for automatically extracting one or more
5 types of features/parameters from input medical
6 image data and combining the extracted
7 features/parameters in a manner that is suitable for
8 processing by the decision support modules 103, 104,
9 and/or 105."

10 Is that right?

11 A So in this case, yeah, they're focusing on
12 decision support modules 103 to 105. Later on, they
13 include 102 as a decision support module. In this
14 case, the distinction is these are the ones that are
15 being fed features from 102.

16 Q Feature analysis module does the extracting;
17 is that right?

18 A That's correct. Yeah.

19 Q And that's module 102?

20 A That's correct.

21 (Reporter clarification.)

22 BY MR. MARANDO:

23 Q And "Feature analysis module 102
24 automatically extracts features/parameters from
25 medical image data and combines them in a matter

1 suitable for processing by modules 103, 104, and
2 105."

3 Is that right?

4 A That's right.

5 Q Can you turn to paragraph 18, please.

6 A Yes.

7 Q So here, Krishnan discloses that the anatomy
8 identification module, which is module 103,
9 implements methods for using the extracted features,
10 parameters, extracted features/parameters to
11 automatically identify anatomical objects.

12 Do you agree with that?

13 A Yeah . They do misnumber it as 102; but I
14 follow your interpretation that it should be
15 numbered 103, consistent with the prior and the
16 figure.

17 Q So the reference to that module as 102 is a
18 typographical error, most likely; right?

19 A I think so. Yeah. I mean, it doesn't match
20 up with the figure.

21 Q Do the anatomy mod- -- withdraw that.

22 The anatomy identification module 103 uses
23 extracted features/parameters as an input, not the
24 images themselves; is that right?

25 A They don't actually say anything explicit

1 other than that they're using extracted features.
2 Extracted features could be images, I suppose, if
3 they're cropped images. But -- so they don't get
4 into that detail as to say that extracted features
5 are not images, but I don't -- that's all I can say
6 based on what's written here.

7 Q They say that you use extracted features as
8 an input to module 103.

9 Is that fair?

10 A That's fair. Yup.

11 Q Can you turn to paragraph 19, please.

12 A Yeah.

13 Q So Krishnan discloses here that:

14 "View identification module implements
15 methods for using the extracted features/parameters
16 to automatically identify the view of an acquired
17 image."

18 Do you agree with that?

19 A Yes.

20 Q And Krishnan refers to the view
21 identification module here as both module 103 and
22 104. The reference to module 103 appears to be a
23 typographical error.

24 Would you agree?

25 A I believe so, yes.

1 Q So the view identification module is module
2 104, according to figure 1; right?

3 A Uh-huh.

4 Q And then paragraph 19 is saying that:

5 "The view identification module 104 uses
6 extracted features/parameters as an input as opposed
7 to the original images to automatically identify the
8 view of an acquired image."

9 Do you agree?

10 A I agree. Yeah.

11 Q All right. Let's turn to paragraph 20,
12 please.

13 A Okay.

14 Q So Krishnan discloses here that:

15 "The quality assessment module 105
16 implements methods for using the extracted
17 features/parameters to assess a level of diagnostic
18 quality of an acquired image dataset and determine
19 whether errors occurred in the image acquisition
20 process."

21 Do you agree with that?

22 A I do. Yeah.

23 Q So Krishnan discloses that:

24 "The quality assessment module 105 uses
25 extracted features/parameters as an input as opposed

1 to the original raw images to assess a level of
2 diagnostic quality."

3 Do you agree?

4 A I do, yeah.

5 Q Let's turn to paragraph 21.

6 A Uh-huh.

7 Q So here, Krishnan discloses that:

8 "In one exemplary embodiment, the various
9 modules 103, 104, and 105 implement database
10 querying methods to use extracted feature data to
11 search for similar-labeled cases in the database
12 106."

13 Do you see that?

14 A I do see that, yes.

15 Q So this is an embodiment of modules 103,
16 104, and 105 implementing database querying methods.

17 Do you agree?

18 A I do. Yup.

19 Q These modules 103, 104, and 105 use
20 extracted feature data as inputs in this embodiment.

21 Do you agree?

22 A Yup. I see that. Yup.

23 Q Can you turn to paragraph 22, please.

24 A Uh-huh.

25 Q So this states that:

1 "In another exemplary embodiment, the
2 various modules 103, 104, and 105 can implement
3 template-based methods to use extracted feature data
4 to search for similar templates in template database
5 107."

6 Do you see that?

7 A I see that, yeah.

8 Q So this is an alternative embodiment that
9 uses template-based methods from -- withdraw that.

10 This is another embodiment -- an alternative
11 embodiment where modules 103, 104, and 105 implement
12 template-based methods.

13 Do you agree?

14 A I do.

15 Q And those modules in this embodiment use
16 extracted feature data as inputs.

17 Do you agree?

18 A I agree, yes.

19 Q Okay. Can you turn to paragraph 23, please.

20 A Yes.

21 Q All right. So this states that:

22 "In another exemplary embodiment, the
23 various methods 103, 104, and 105 can implement
24 classification methods that utilize the
25 classification module 108 to process extracted

1 feature data to classify the image dataset under
2 consideration."

3 Do you see that?

4 A I do.

5 Q So this is describing an alternative
6 embodiment where modules 103, 104, and 105 implement
7 classification methods.

8 Do you agree?

9 A Yes.

10 Q So paragraph 23 begins by stating that:

11 "The various modules 103, 104, and 105 can
12 implement classification methods."

13 And does not list module 102; is that right?

14 A No, it does list module 102. It's just in
15 the classified --

16 (Reporter clarification.)

17 THE WITNESS: I'm sorry. Yeah, yeah. The

18 --

19 MR. MANSKE: Why don't we just read that
20 question back. I think we're getting a little
21 confused on the record.

22 BY MR. MARANDO:

23 Q Yeah, so paragraph 23 begins, right, in the
24 first sentence, by stating that the various modules,
25 103, 104, and 105, can implement classification

1 methods in that first sentence.

2 Do you agree with that?

3 A Yes.

4 Q So it does not list module 102 as a module
5 that can implement classification methods in that
6 sentence that begins paragraph 23.

7 Do you agree?

8 A And I said yes. Listed in the last
9 paragraph but not in the first paragraph.

10 Q So paragraph 89 of your declaration,
11 Exhibit 1002, do you have that?

12 A I do.

13 Q So you said:

14 "According to an exemplary embodiment, the
15 various modules 103 through 105 perform their
16 respective functions using machine learning."

17 Do you see that?

18 A Yup.

19 Q And you said that:

20 "Modules 103 through 105 may be implemented
21 using one or more trainer classifiers."

22 Is that right?

23 A In that -- yeah, in that exact location, I
24 referred to 103 and 105. In other places, it's 102
25 to 105 in the declaration.

1 Q Well, you only said 103 through 105 here;
2 right?

3 A In that one sentence, yes. On page 41,
4 which is before that sentence, it says:

5 "A bank of classifiers 110 that are used by
6 the various modules 102 to 105 to perform their
7 respective functions."

8 So in some places, yes, the wording is
9 different. But -- so yeah, you are correct in 89,
10 it does not list 102 again, though it did refer to
11 it in 85.

12 Q So did you intentionally omit module 102 in
13 paragraph 89?

14 A No, it wasn't intentional.

15 Q Do you want to revise your opinion in
16 paragraph 89, or are you standing by paragraph 89?

17 A 89 doesn't say that 102 cannot be
18 implemented by -- you cannot implement classifiers.
19 So I have no problem with listing 103 to 105 here.
20 It does not speak to any exclusion of 102.

21 Q So your opinion is -- withdraw that.

22 You didn't mention 102 in paragraph 89. You
23 specifically called out modules 103 through 105; but
24 you're saying, you know, you could have listed 102
25 as well. Is that what you're saying?

1 A I could have listed 102. I'm just trying to
2 see whether that exact point is being made, it is --
3 whether it is more relevant to list 103 to 105
4 because they have different purposes. So it would
5 have been correct to list 102, and this paragraph
6 doesn't really -- it would have been correct -- I
7 don't read anything into its omission in that place,
8 but there is no need to introduce it again in that
9 sentence, is my opinion.

10 Q If module 102 used machine learning,
11 wouldn't you have put it in paragraph 89?

12 A Not necessarily. You don't have to repeat
13 the same thing again and again at every single
14 place. If it was said right before that, then I
15 don't know whether seeing it again or not seeing it
16 again in any way should be read as anything.

17 Q You're saying you said it right before that,
18 but I don't know what you're talking about. So you
19 can tell me. Can you tell me what you're talking
20 about?

21 A Paragraph 85. A bank of classifiers 110
22 that are used by the various modules, 102 to 105, to
23 perform their respective functions.

24 I think that's taken verbatim from Krishnan.
25 Let me just double-check that -- which I don't think

1 it's verbatim.

2 Yeah, it's not verbatim.

3 Q Yeah, that's not a quote.

4 A That's not a quote. It's very similar to
5 what is said in 0021 and 0023, but it's just not a
6 direct quote.

7 Q The quote from Krishnan is actually:

8 "The classifiers are implemented by the
9 various decision support modules (102" --

10 -- it's not a dash but it's 102 to 105 --

11 A Yeah, Krishnan is not a master of
12 typographical consistency. So yeah, there's a
13 little senora sign and then for performing their
14 respective functions. Yeah. So wording is similar,
15 but it is not a direct quote.

16 Q It's your opinion that module 102 is
17 implemented as a classifier in Krishnan?

18 A It can be. It's not -- Krishnan leaves it
19 quite vague as to the different possible uses that
20 -- I'm sorry, for different possible methods that
21 could be applied to -- to 102. Oh, and a classifier
22 is one embodiment, but they also list others too.

23 Q What part of Krishnan are you relying on to
24 say that a classifier is one embodiment of module 1
25 and 2?

1 A The sentence you just read. 0023:

2 "The classifiers are implemented by the
3 various decision support modules, 102-105, for
4 performing their representative functions."

5 And then in 0034, they mention a mixture of
6 things that 102 could use, some of them would be
7 construed as classifiers, some of them would not.
8 So I'm reading into the code.

9 In 0021, a classification system 108, which
10 can be used singularly or in combination by one or
11 more of the various automated decision support
12 modules, 102 to 105.

13 Q Paragraph 23 of Krishnan where it begins by
14 saying that "the various modules, 103, 104 and 105
15 can implement classification methods," do you see
16 that?

17 A I do, yes.

18 Q Are you reading that sentence to not be
19 limiting that Krishnan also meant that 102 could
20 be -- implement classification methods?

21 A Yeah.

22 Q What's your support for reading Krishnan
23 differently from what it actually says?

24 MR. MANSKE: Object to form.

25 THE WITNESS: I'm reading Krishnan exactly

1 as it's written. They use 102-105 and say the
2 classifiers are implemented by the various decisions
3 for modules in two different locations. I also
4 think that a POSITA would expect that at this --
5 again, either at 2005 or prior or 2018 or prior,
6 that a feature extraction module can potentially
7 make use of classifiers.

8 So both the text directly and my
9 understanding of how a POSITA would read it.

10 BY MR. MARANDO:

11 Q So you're relying on some sentences in
12 Krishnan that refer generically to modules 102 to
13 105 as support for the fact that you believe the
14 classifiers -- you know, module 102 can be
15 implemented as a classifier; is that right?

16 A Yeah, that means the text as is; and like I
17 said, I'm also using how a POSITA would read that
18 text in light of an understanding that a feature
19 extraction could be supported by a classifier.

20 Q Okay. So as to that part, so you're saying
21 that you're reading Krishnan in view of -- you know,
22 a POSITA's knowledge as of 2005 that a POSITA would
23 have understood that feature extraction could be
24 performed by a neural network classifier; is that
25 right?

1 A I didn't bring up neural network yet, but at
2 this point, a classifier. We can get into the
3 neural network aspect which comes into 0044 as being
4 one possible machine learning method that could
5 be -- that could be -- so that could be an
6 embodiment. But it's not said directly here that
7 there's a neural network.

8 Q In 2005, had you accumulated at least one
9 year of research experience -- one second -- at
10 least one year of research experience training
11 machine learning models to analyze ultrasound data?

12 A No.

13 Q When did you first have that amount of
14 research experience?

15 A 2015.

16 Q So your knowledge of what was known to a
17 POSITA in 2005 is based on what?

18 A POSITAs can read references that are
19 published prior to 2005. As long as the content of
20 those references include neural network classifiers
21 used for feature extraction and classification,
22 then I don't need to have sort of lived in that
23 space in 2005 to be able to infer what a POSITA
24 would know.

25 Q Just to confirm that when you're assuming

1 that Krishnan or -- opining that Krishnan discloses
2 the classifier 102 -- withdraw that.

3 When you're opining the classifier -- the
4 module 102 can be a classifier, you're relying on
5 the disclosure of Krishnan and just POSITA knowledge
6 of what a feature extraction module could be; is
7 that right?

8 A That's correct.

9 Q And the disclosure of Krishnan that you're
10 relying on is the parts where it says modules 102
11 through 105 and not the specific sentences that say
12 modules 103, 104, and 105 can be classifiers; is
13 that right?

14 A That's right. I'm using the inclusive
15 sentences and not using those -- unless there are
16 sentences that say explicitly that 102 cannot be
17 used, I don't find additional value coming from
18 those that mention the subset.

19 MR. MARANDO: Why don't we take a break.

20 THE WITNESS: This is not lunch; right?

21 MR. MANSKE: Let's go off the record first.

22 THE VIDEOGRAPHER: The time is 8:14 a.m.

23 We're off the record.

24 (Recess.)

25 THE VIDEOGRAPHER: The time is 8:25 a.m.

1 We are back on the record.

2 BY MR. MARANDO:

3 Q All right. Welcome back.

4 So before the break, we were talking about
5 Krishnan's module 102.

6 And I think you said that you're relying on
7 some sentences in Krishnan that inclusively refer to
8 modules 102 through 105 as classifiers; is that
9 right?

10 A They could -- they could use classifiers.

11 Q Can you identify any sentence in Krishnan
12 that specifically states and isolates module 102 as
13 implementing a classifier?

14 A The same sentences the classifiers are
15 implemented by the various decision support modules
16 102 to 105, I read as being that module 102 could
17 implement a classifier.

18 Q So it's the same sentences we were talking
19 about before that refer to all modules, 102 through
20 105; is that right?

21 A That's right.

22 Q At the time Krishnan was filed in 2005, is
23 it accurate that you had no experience turning
24 machine learning models to analyze medical image
25 data?

1 A That's accurate.

2 Q Your understanding of what a POSITA would
3 have known in 2005 about using classifiers for
4 feature extraction is based on your review of the
5 literature from that time period and before that
6 time period.

7 Is that fair?

8 A Yeah. I would go back and say that as I
9 mentioned before, the framing when I analyzed this
10 was a POSITA at the time of the priority date.

11 But when it comes to my opinion today that
12 I'm giving you, it is based on how they would review
13 the literature. I have -- at that point, I had
14 experience in machine learning and so I'm
15 transferring over how I would view a POSITA in
16 machine learning would look at prior references, but
17 I'm not explicitly saying that I was a computer
18 vision expert at the date of 2005.

19 Q Okay. So reviewing paragraphs 21 through
20 23, which we've now looked at, this is describing
21 database querying methods, template-based methods,
22 and classification methods as "alternative exemplary
23 embodiments."

24 Do you agree?

25 A I agree.

1 Q Let's look at figure 2, please.

2 A Okay.

3 Q So figure 2 is showing the steps of
4 Krishnan's process.

5 Do you agree?

6 A I do.

7 Q In step 200, the process obtains the medical
8 image dataset; correct?

9 A That's correct.

10 Q In step 201, the process processes the image
11 dataset to extract relevant feature data; correct?

12 A That's correct.

13 Q And then, in step 202, the process performs
14 automatic anatomy identification, view
15 identification and/or image quality assessment using
16 extracted feature data; correct?

17 A That's correct.

18 Q So the steps performed in step 202,
19 correspond to the functions that are performed by
20 modules 103, 104, and 105.

21 Do you agree?

22 A I agree.

23 Q In step 203, the process then
24 labels/characterizes the image dataset based on
25 processing results. Agreed?

1 A Agreed.

2 Q So let's turn to paragraph 34, please.

3 A Okay.

4 Q And so this is describing steps 201 and step
5 202 in figure 2.

6 Do you agree with that?

7 A I agree. Yes.

8 Q And similar to what we just discussed,
9 Krishnan describes step 201 as:

10 "The image dataset will be processed to
11 determine or otherwise extract relevant feature data
12 from the image dataset."

13 Do you see that?

14 A Uh-huh.

15 Q Then step 201, that processing is performed
16 by the automatic feature analysis module 102.

17 Do you agree?

18 A I agree.

19 Q Now, further down in paragraph 34, Krishnan
20 states that:

21 "Feature extraction can implement known
22 segmentation and/or filtering methods for segmenting
23 features or anatomies of interest by reference to
24 known or anticipated image characteristics such as
25 edges, identifiable structures, boundaries, changes

1 or transitions in colors or intensities, changes or
2 transitions in spectrographic information,
3 et cetera, using known methods."

4 Do you see that?

5 A Yeah, they're very broad there in terms of
6 what can be used.

7 Q So it states that feature extraction can
8 implement known segmentation and/or filtering
9 methods.

10 Do you agree?

11 A Yes.

12 Q It does not state that feature extraction
13 can implement classification methods or neural
14 networks in paragraph 34.

15 Do you agree?

16 A It doesn't state the word "classifier"
17 deliberately. The segmentation is a classification
18 step so a POSITA would read that as being a
19 classification, but I agree that in terms of that
20 particular sentence, the word "classifier" does not
21 appear.

22 Q Neural network doesn't appear either; right?

23 A Neural network does not appear here.
24 They're very broad; and even prior to that, they're
25 even broader and say:

1 "The relevant features that are extracted,
2 determine will vary depending on the imaging
3 modality, the supported clinical domains, and the
4 methods implemented."

5 So I read the sentence you read as being,
6 here are some examples that could be used. But I
7 agree, yes, there is not explicitly the word
8 "classify" or the word "neural network" here.

9 Q So when Krishnan refers to known
10 segmentation and/or filtering methods as of its
11 filing date in 2005, your knowledge of what those
12 methods are is based on your review of the
13 literature and not your personal experience; is that
14 correct?

15 A That's correct. Yes. That is how I have
16 always approached any field is, you implement what
17 you can read about prior to the date of the present.
18 But no, I'm not saying that I was speaking to people
19 who were -- in 2005, I was speaking to people who
20 were computer vision researchers and asking them or
21 polling them as to what it is that they would
22 understand. I agree.

23 Q In your declaration, have you described
24 anywhere what known segmentation or filtering
25 methods were as of 2005?

1 A I don't believe that I listed what they
2 were. Then again, the declaration was written the
3 way a POSITA would read -- would read Krishnan prior
4 to the priority data. But no, I don't think that
5 there's any enumeration of segmentation and/or
6 filtering methods prior to 2005.

7 Q Can you turn to paragraph 35, please.

8 A Yes.

9 Q And so Krishnan here discloses that step 202
10 can be implemented using one or more techniques
11 including the database-query approach, for example,
12 figure 3; the template-processing approach, for
13 example, figure 4; and classification approach, for
14 example, figure 5.

15 Is that correct?

16 A Yes.

17 Q So these are the three alternatives that
18 we've discussed already. Agreed?

19 A That's true.

20 Q So according to paragraph 35, then looking
21 at step 202 of figure 2, figure 5 is describing
22 methods for automatic anatomy identification,
23 automatic view identification, and image quality
24 assessment, according to a classification approach;
25 right?

1 A Figure 5, yes.

2 Q And those functions described in step 202 of
3 figure 2, those are what figure 5 is describing, and
4 those correspond to the functions of the automatic
5 anatomy identification module 103; the automatic
6 view identification module 104; and the automatic
7 quality assessment module, 105; right?

8 A That's correct.

9 Q And figure 2 describes step 201 separately
10 as a step of processing the image dataset to extract
11 relevant feature data; is that right?

12 A Yes.

13 Q And step 201 corresponds to the automatic
14 feature analysis module 102; right?

15 A That's correct.

16 Q So the database query template processing
17 and classification approaches described in Krishnan,
18 those are approaches for performing step 202, which
19 corresponds to modules 103, 104, and 105; is that
20 right?

21 A Those are not the only ones that can use
22 classification approaches; however, it is true that
23 103, 104, and 105, those are the descriptions
24 Krishnan has provided for how they could be
25 implemented.

1 Q So when Krishnan is talking about -- you can
2 finish. I'm sorry.

3 A I'm sorry. I apologize.

4 I'm just saying that -- it's still not clear
5 that that is -- these are the only embodiments; but
6 those are the ones that are listed within the text
7 itself.

8 Q Got it. So when Krishnan is describing
9 performing step 202, or figure 2, it provides a
10 specific example in figure 5 and what it
11 specifically enumerates in step 202 and then shows
12 in figure 5 of a classification embodiment is an
13 implementation of modules 103, 104, and 105.

14 That's what Krishnan explicitly states; is
15 that correct?

16 A That's true.

17 Q When describing module 102, as we've talked
18 about, Krishnan states that that module can
19 implement known segmentation and filtering methods;
20 is that right?

21 A It's broader than that. I mean, it does say
22 in -- in some places, it says it's supported by the
23 classifier module. In other places, it says that
24 the exact features that will be used depend on the
25 application, and then there is a separate sentence

1 that focuses on the -- some of the specifics that
2 you mentioned in terms of what it could implement.

3 Q When you said the "classifier module,"
4 that's where you're referring to the sentences that
5 refer to modules 102 through 105 instead of
6 specifically referring only to module 102
7 separately; is that right?

8 A That's correct, yes.

9 Q All right. Let's take a look at paragraph
10 42, please.

11 A Okay.

12 Q And this is describing figure 5; is that
13 right?

14 A That is true.

15 Q And this is a figure describing
16 classification methods; right?

17 A That is true.

18 Q And paragraph 42 says that:

19 "In the figure 5 embodiment, the feature
20 data extracted from the image dataset would be input
21 to classifiers, step 500."

22 Do you see that?

23 A Yes.

24 Q And so feature data extracted from images
25 are the inputs to the classifiers in figure 5; is

1 that right?

2 A That's correct. Yeah.

3 Q Can you turn to paragraph 43, please.

4 A Uh-huh. I'm there.

5 Q So paragraph 43 states that:

6 "A bank of classifiers could be constructed
7 to classify the images based on the features
8 extracted."

9 Do you see that?

10 A I do.

11 Q And in paragraph 43 states:

12 "These classifiers would use the set of
13 features as an input."

14 Do you see that?

15 A Uh-huh.

16 Q So here, Krishnan is saying that when
17 modules 103, 104, and 105 are implemented as
18 classifiers, the inputs are extracted features; is
19 that right?

20 A That's correct. Yes.

21 Q So these modules in the figure 5 classifier
22 description, they don't receive the raw images.
23 They receive extracted features; right?

24 A Yeah. It's not -- I mean, something has
25 been derived from the raw images. As to whether the

1 output is a corrupt image, unclear but something has
2 been derived from the raw images by the feature
3 extraction step.

4 Q And that something is features; right? Its
5 features are the input to the modules; right?

6 A Yes. Features is somewhat of a broad term,
7 but it is features, yes. There's nothing saying
8 that it's bypassing the feature extraction step and
9 going directly into the 103, 104, 105.

10 Q Can you turn to paragraph 44, please.

11 A Yes.

12 Q And paragraph 44 is talking about the
13 classifiers; right?

14 A Uh-huh.

15 Q And this is referring to classifiers that
16 perform step 202 shown in figure 2; right?

17 A I don't think -- at that point, I don't
18 think there's any direct link to it being 202. It
19 could be anyplace where there's a mention of a
20 classifier. I read that these would be the types of
21 classifiers -- again, very broad, but I don't see
22 any mention of 202, figure 5, restriction to 103,
23 104, or 105 here.

24 Q So you read paragraph 44 as not applying to
25 figure 5 specifically; is that right?

1 A That is correct.

2 Q Paragraph 44 is following up on the
3 discussion of figure 5 in paragraph 42.

4 Do you agree?

5 A No. That is your interpretation.

6 I see it as being a paragraph devoted as a
7 general description of classifiers throughout this
8 document.

9 Q So paragraph 44 is not describing figure 5
10 in your opinion?

11 A It is not exclusively describing figure 5.

12 Q What is it describing, then?

13 A The use of -- the use of classifiers,
14 wherever they're mentioned in Krishnan, these are
15 the specifics involving possible embodiments of
16 those classifiers training. So that goes back then
17 to those earlier sentences we described from 0021,
18 0023, which are where classifiers could be used.

19 Q Paragraph 44 does not mention module 102.

20 Would you agree with me?

21 A Paragraph 44 doesn't mention any modules,
22 but I agree with you in the way that you stated it.

23 Q So there's nowhere in paragraph 42 that
24 explicitly discloses that module 102 can implement a
25 classification approach.

1 Would you agree?

2 A Yes. The paragraph 44 -- yeah, I think you
3 meant 44. That is not directly linking itself to
4 any specific modules. The other direction, though,
5 is sound, which is module to classifier --

6 (Reporter clarification.)

7 THE WITNESS: I was just saying that at
8 least the way that I am reading this, a POSITA would
9 read it is that there is a link from module to
10 classifier to paragraph 44; but the reverse link for
11 paragraph 44 insists on which module it supports is
12 not present.

13 BY MR. MARANDO:

14 Q And you're correct. I meant to refer to
15 paragraph 44, so thank you for clarifying. And just
16 to be clear: Paragraph 44 does not mention module
17 102.

18 Agreed?

19 A Agreed. No, it does not mention any
20 modules.

21 Q So my understanding of your analysis of the
22 claims is that you are relying on the classification
23 approach disclosed in Krishnan; is that right?

24 A Relying on it in what -- in what
25 circumstance?

1 Q To disclose certain claim elements, you're
2 relying on the classification approach and not the
3 template-based query -- let me start over.

4 To disclose certain claim elements here of
5 the independent claims, you're relying on the
6 classification approach and not database querying or
7 template-based processing approaches.

8 Is that true?

9 A That is true, because the '029 is about
10 neural networks and some of -- some of '029's neural
11 networks and so the template and database methods
12 are not relevant to anticipation or obviousness.

13 Q Can you go to paragraph 111 of your
14 declaration, please.

15 A Yes.

16 Q It's your opinion that the automatic feature
17 analysis module 102 of Krishnan, teaches limitation
18 1B, which is deriving one or more extracted feature
19 representations from the set of ultrasound images;
20 is that right?

21 A That's correct.

22 Q And paragraph 114, for example, you would
23 state that -- Krishnan also states that feature
24 extraction can implement known segmentation and/or
25 filtering methods; is that correct?

1 A Yes. It's written there.

2 Q In your declaration, for limitation 1B, you
3 did not opine that module 102 performs feature
4 extraction using a neural network; is that right?

5 A That's correct. Yes. Because 1B itself
6 didn't mention a neural network. So there was no
7 need to opine on it there.

8 Q Can you turn to paragraph 119, please.

9 A Yes. Uh-huh.

10 Q So you point to the bank of classifiers and
11 state that Krishnan further explains that these
12 classifiers would use the set of features as an
13 input and classify the image as belonging to a
14 particular level of quality.

15 Do you see that?

16 A I do, yes.

17 Q And you state:

18 "Thus, in my opinion, Krishnan discloses
19 determining based on the derived one or more
20 extracted feature representations, a quality
21 assessment value, representing a quality assessment
22 of the set of ultrasound images."

23 Do you see that?

24 A I do.

25 Q All right. So it's your opinion that

1 Krishnan's classifier embodiment teaches limitation
2 1C; is that right?

3 A So in paragraph 118 -- and 1C can be broader
4 than that. So paragraph 118, there's also reference
5 to the database-query approach, template-processing
6 approach, and/or classification. All of those would
7 be relevant for 1C because 1C is not specific as to
8 what it uses; so there's a need to be similarly
9 broad in anticipation.

10 Q So let me unpack that, then.

11 You're relying on other alternative
12 approaches as well as classifiers for limitation 1C?

13 A I'm relying on Krishnan. And Krishnan
14 presents a broad set of alternatives that can be
15 used for classification -- sorry, for quality
16 assessment. And so we're just relying on Krishnan.
17 That's all. It's not a deliberate attempt to try to
18 restrict what it is being proposed to match -- to
19 anticipate 1C.

20 Q So are you relying on the database querying
21 embodiment as anticipating limitation 1C?

22 A No. I'm relying on Krishnan, which has a --
23 a broader set of possible methods that could be used
24 for quality assessment of which they list some as
25 embodiments. So there's no need for -- I don't need

1 to restrict 1C to any specific embodiments. It is
2 left as being what Krishnan teaches, and that's what
3 we're using. That's the approach here.

4 Q So are you combining the teachings of
5 Krishnan's embodiments for 1C?

6 MR. MANSKE: Object to form.

7 THE WITNESS: I don't understand the word
8 "combining" here. I don't know why there's a need
9 to use an additional term. Krishnan has stated that
10 -- or Krishnan discloses that they -- there is a
11 quality assessment step in their pipeline. They do
12 provide some specifics as possible embodiments.
13 Others are left broadly or relying on Krishnan to
14 be -- you know, as an anticipation for 1C.

15 BY MR. MARANDO:

16 Q Can you identify which embodiments you're
17 relying on for 1C?

18 MR. MANSKE: Object to form.

19 THE WITNESS: I don't think there's any need
20 to rely on specific embodiments. Krishnan itself is
21 broad regarding view -- I'm sorry, quality
22 assessment. So there's no need to limit to specific
23 embodiments, as far as I understand.

24 BY MR. MARANDO:

25 Q Okay. So you're relying on the teachings of

1 database querying, template-based processing, and
2 classification together for limitation 1C, then; is
3 that right?

4 MR. MANSKE: Objection.

5 THE WITNESS: And -- sorry. And any other
6 embodiments that are -- you know, Krishnan -- all
7 I'm saying is that Krishnan is not excluding
8 themselves to those embodiments in as a -- as a
9 prior art.

10 BY MR. MARANDO:

11 Q And I understand that. And, you know, I'm
12 just trying to understand what your opinion is.

13 So are you saying that the teachings
14 regarding the three alternative approaches for
15 quality assessment, that you're relying on those
16 collectively for limitation 1C?

17 A No. I'm relying on Krishnan for 1C.
18 Krishnan is broad as to how quality assessment could
19 be performed. Those are some embodiments that are
20 possible. It is broader than that. And I'm relying
21 on Krishnan. That's the -- I'm not trying to limit
22 to specific embodiments.

23 Q So you're not picking an embodiment from 1C.

24 Is that fair?

25 A That is fair, yes.

1 Q Are there any embodiments of Krishnan as to
2 quality assessment that you're not relying on from
3 1C?

4 A Sorry. Can you explain that again?

5 Q Sure. So Krishnan discloses embodiments for
6 quality assessment related -- that include
7 approaches that are through database querying,
8 template-based processes, and classification
9 methods; right?

10 A Yeah, I mean, if you look at sentence 118 in
11 the area you brought us to:

12 "Methods for automatic image quality
13 assessments, according to its exemplary embodiments
14 can be implemented using one or more techniques,
15 including a database-query approach,
16 template-processing approach, and/or
17 classification."

18 I read that as being Krishnan is broad
19 regarding what can be used. It is not specific as
20 to what cannot be used. I'm -- you know, I'm not
21 being specific as to what cannot or can be used for
22 this -- for this claim.

23 Q So you're not being specific. You're not
24 taking the position on what embodiments can or
25 cannot be used for limitation 1C; is that right?

1 A That's correct.

2 Q Can you turn to paragraph 124, please.

3 A Yes.

4 Q So this is in the context of your analysis
5 of limitation 1D; right?

6 A Yes.

7 Q So in paragraph 124, you state that Krishnan
8 states:

9 "Methods for automatic view identification,
10 step 202, can be implemented using one or more
11 techniques including classification, for example,
12 figure 5, that utilize the extraction features to
13 provide automated decision support functions."

14 Do you see that?

15 A I do.

16 Q And then in paragraph 125, you state that
17 you're referring to figure 5 at the beginning of
18 that paragraph.

19 Do you see that?

20 A Yes.

21 Q And that paragraph 125 closes with you
22 stating:

23 "Thus, in my opinion, Krishnan discloses
24 determining based on the derived one or more
25 extracted feature representations and image property

1 associated with the set of ultrasound images as
2 claimed."

3 Do you see that?

4 A I see that. Yes.

5 Q So for limitation 1D, are you relying on
6 Krishnan's teachings regarding classifiers?

7 A The situation is similar. It's that
8 classifiers are just one of the things that can be
9 included. I'm relying on Krishnan again broadly but
10 not taking a position on which can be -- which can
11 be included or cannot be included in this. The
12 claims of '029 are broad, so I'm being similarly
13 broad.

14 Q Can you point to any instances in your
15 analysis of limitation 1D where you're relying on
16 the database querying or template approaches?

17 A There's no need to be specific on which
18 approaches are being used. So the '029 Claim 1D is
19 broad. I'm not deliberately trying to restrict what
20 can and cannot be used other than saying that
21 Krishnan broadly discloses an automated view
22 identification step.

23 Q Okay. Understood. So there's no places
24 where you're pointing to those other two approaches.

25 Is that true?

1 MR. MANSKE: Object to form.

2 THE WITNESS: There's no -- so you're
3 talking about 1D in particular?

4 BY MR. MARANDO:

5 Q Yes.

6 A So nowhere -- nowhere in the -- let me just
7 check.

8 Nowhere in the text -- nowhere in the text
9 in the declaration for 1D explicitly calls out --
10 oh, sorry, 1D explicitly calls out which methods are
11 being used here. That's correct. It relies on
12 Krishnan's -- how Krishnan has framed view
13 classification can be done.

14 (Reporter clarification.)

15 THE WITNESS: Sorry. How view
16 identification could be done.

17 BY MR. MARANDO:

18 Q You do specifically refer to figure 5; is
19 that right?

20 A In one place, there's a reference to
21 figure 5, yes. Not that is in any way exclusively
22 what is being discussed here, but that is an example
23 of where view identification is discussed in
24 Krishnan.

25 (Simultaneous colloquy.)

1 THE WITNESS: Go ahead. Go ahead.

2 BY MR. MARANDO:

3 Q Well, figure 5 is the classification
4 approach in Krishnan; right?

5 A Yes, I guess what I'm saying is that the
6 purpose of this section is to show that Krishnan
7 considers view identification not to deliberately
8 either restrict or include any specific methods
9 other than making sure that it does address view
10 identification. And classification is one of those
11 methods, but it's not trying to be any more
12 exclusive than that.

13 Q There's no other methods that you point to
14 other than classification for 1D; is that right?

15 A It's not written there exclusively. It just
16 quotes the methods for view identification can be
17 implemented from Krishnan. So -- but classification
18 is the only one that is written explicitly in this
19 section.

20 Q Can you please turn to paragraph 146.

21 All right. And this is your analysis of
22 Claim 21; right?

23 A That's correct. Yes.

24 Q And I want you to move forward to paragraph
25 151 through 152. So let me know when you're there.

1 A I'm there. Yes.

2 Q So it's your opinion that the automatic
3 feature analysis module 102 teaches limitation 21B,
4 which is derive one or more extracted feature
5 representations from the set of ultrasound images;
6 is that right?

7 A That's correct.

8 Q Can you move forward to paragraph 153,
9 please.

10 A Yes.

11 Q Now, it's your opinion that Krishnan
12 discloses 21C in the same way that Krishnan
13 discloses the corresponding method claim element 1C;
14 right?

15 A That's correct.

16 Q All right. So what we talked about just
17 before as to your opinions on 1C and the
18 embodiments, the same answers applied to 21C; is
19 that right?

20 A That's correct. Yes.

21 Q Moving forward to paragraph 155. Are you
22 there?

23 A Yeah.

24 Q It's your opinion that Krishnan discloses
25 21D in the same way Krishnan discloses the

1 corresponding method claim element 1D; right?

2 A That's correct.

3 Q So what we discussed regarding 1D as to the
4 embodiments that you're relying on also applies to
5 21D; right?

6 A I don't remember us discussing embodiments
7 that we're relying on in this instance, but it was
8 left as being that they were not explicit sort of
9 insistence on only some embodiments being able to be
10 used; but you're correct that whatever that
11 discussion resulted in is also applicable to 21D.

12 Q Fair enough. The discussion of 1D also
13 applies to 21D; right?

14 A Yes.

15 Q In paragraph 157 -- let me know when you're
16 there.

17 A Yes.

18 Q So in paragraph 157, you're pointing to the
19 classifier embodiment; right?

20 A This looks like it mirrors what was going on
21 in -- the 1D section where that is one of the
22 embodiments that is discussed here. It's the same
23 sentence, actually, identical in the same figure.
24 So whatever we discussed previously is relevant
25 here, that Krishnan is broad, Krishnan includes

1 multiple possible implements. It lists some
2 specific ones. But largely just paraphrasing and
3 excerpting that statement here.

4 Q Okay. You don't explicitly rely on or cite,
5 I should say, disclosures regarding the
6 nonclassifier embodiments for 21D; is that right?

7 A It's neither explicitly including, nor
8 excluding, in my opinion.

9 Q Well, let me ask a more precise question.
10 You don't cite disclosures regarding the
11 database querying or template-based approaches for
12 21D; is that right?

13 A So by saying "cite," do you mean verbatim
14 excerpt those words and include them in this
15 section?

16 Q I'm sorry, cite as including the words or
17 citing paragraphs relevant to those embodiments.

18 A Let's check. So no:
19 "0035 is methods for automatic anatomy
20 identification of view identification image quality
21 assessment, step 202, according to exemplary
22 embodiments can be implemented using one or more
23 techniques, including a database-query approach,
24 template-processing approach, and/or
25 classification."

1 So it is that same section you had read
2 before? The broad --

3 Q That's just generically describing the three
4 approaches; right?

5 A Well, yeah, and somewhat beyond because
6 they're just saying can be. But yes, that is all
7 that is. Yes.

8 Q I guess my question more specifically is,
9 are you relying on any specific implementation
10 details of those other two approaches. Are you
11 citing them for 21D?

12 A No, they're not listed here. I'm just
13 saying, this section is being left broadly to
14 consider a sort of broad set of possible embodiments
15 that could be used for this step. It is not
16 explicitly saying that it can only be done in this
17 way.

18 MR. MARANDO: Why don't we take a break.

19 MR. MANSKE: Let's go off the record.

20 THE VIDEOGRAPHER: The time is 9:18 a.m.

21 We're off the record.

22 --oOo--

23 (LUNCHEON RECESS)

24 --oOo--

25 THE VIDEOGRAPHER: The time is 10:01 a.m.

1 We're back on the record.

2 BY MR. MARANDO:

3 Q All right. Welcome back.

4 So you testified earlier that segmentation
5 is a classification step?

6 Do you recall that?

7 A I do.

8 Q Can you point to any sentence in Krishnan
9 that describes module 102 segmentation methods as
10 classification methods?

11 A That's using -- so the answer is no. But
12 that's using my knowledge of how to train
13 segmentation models and how a POSITA would
14 understand it and that segmentation is pixel-level
15 classification.

16 (Reporter clarification.)

17 THE WITNESS: But no, Krishnan does not
18 explicitly make that statement.

19 BY MR. MARANDO:

20 Q Krishnan's paragraph 23 identifies the
21 modules that can implement classification methods as
22 modules 103, 104 and 105 in the first sentence; is
23 that right?

24 A We said that, yeah, 102 to 105 in the last
25 sentence; 103 to 105 in the first sentence. Yes.

1 Q Right. So when it lists the specific
2 modules individually, 103, 104, and 105, it does not
3 list module 102 separately; is that correct?

4 A Do you mean, comma, separated? No. There's
5 a hyphen versus a comma, yes. I don't know if
6 there's a useful distinction in that, but I would
7 agree the sentence is written like that.

8 Q Do you recall earlier you said paragraph 34
9 is broader than segmentation in filtering?

10 A Yes. I recall that.

11 Q Other than segmentation and filtering, can
12 you identify any specific method in paragraph 34
13 that module 102 uses for feature extraction?

14 A I think this is the same issue we've been
15 getting at, is that the Krishnan is deliberately
16 very broad and then does provide some good examples.
17 So the earlier sentences are just around how it will
18 vary depending on the image modality and then the
19 sentence you were describing is a "can," which I
20 describe as being permissive but doesn't exclude
21 what the much broader set of feature extraction
22 possibilities that would have been available in
23 2005.

24 Q Fair enough. Are there any specific methods
25 enumerated in paragraph 34 other than segmentation

1 and filtering for feature extraction?

2 A Yes. There's this -- the further various
3 types of feature data can be obtained across images
4 such as motion of a particular point, but that would
5 not be a filtering or segmentation step --
6 segmentation example.

7 Q That's another technique that you believe is
8 disclosed in paragraph 34?

9 A Yes. Yeah, I see that sentence. Yes.

10 Q Anything else?

11 A Things like features could include any kind
12 of characteristic that can be extracted from an
13 image such as a particular shape or texture, I don't
14 see texture as being something that was achieved by
15 segmentation or filtering either.

16 So I think transitions to colors or
17 intensities are also not clear how that would be
18 segmentation or filtering. So I don't think this
19 paragraph in any way seems like it is restricted to
20 segmentation and filtering.

21 Q Yeah, I understand the distinction you're
22 making. And I guess I'm just trying to clarify, you
23 know: When it comes to specific methods that are
24 identified in paragraph 34, you may have an opinion
25 that it's not limited to those, and I understand

1 that. The specific methods that we've talked about
2 are segmentation, filtering, and then you've just
3 referred to obtaining feature data across images.

4 Is that -- are those the methods that are
5 described -- you know, with specificity?

6 MR. MANSKE: Object to form.

7 THE WITNESS: Yes, with specificity, those
8 three broad groups are included here. Yes. And as
9 to the actual implementations of those methods, it
10 is not included here, how one would segment, how one
11 would filter, that's not spelled out.

12 BY MR. MARANDO:

13 Q Okay. In your declaration, you did not
14 analyze what a POSITA would have understood
15 Krishnan's known segmentation and filtering methods
16 to mean as of 2005; is that correct?

17 A That's correct. Yes. I said today that my
18 opinion would not have changed, but the paragraph
19 that is relevant is that I understood this to be as
20 of the priority date of 2018.

21 Q Okay. Can you turn to paragraph 184,
22 please, of your declaration.

23 A Yes.

24 Q And this is a part of your declaration
25 analyzing Claim 30. But specifically paragraph 184

1 is the beginning of an analysis of limitation 30B;
2 is that right?

3 A That's correct, yup.

4 Q And then further down in paragraph 186, you
5 state that:

6 "Krishnan further states the classifiers are
7 implemented by various decision support modules, 102
8 to 105, for performing their respective functions."

9 Do you see that?

10 A Yup.

11 Q So -- sorry for making you jump back and
12 forth. But in paragraph 180 -- or, I'm sorry,
13 paragraph 89, could you turn to that.

14 A 8-9?

15 Q 8-9. Yeah.

16 A Yeah.

17 Q So I think we talked about this paragraph
18 earlier; but here, you stated that modules 103 to
19 105 performed the respective functions using machine
20 learning and may be implementing -- implemented
21 using one or more trained classifiers; right?

22 A Yeah, I remember the discussion. I pointed
23 to 85; you pointed to 89. 85 talks to 102; 89 talks
24 about 103, 105; and both of them talk about
25 respective functions. So yeah, we had this

1 discussion earlier on.

2 Q So let me just ask a question.

3 Is paragraph 89 wrong in your opinion in the
4 sense that you should have identified 102 as well?

5 Or is paragraph 186 wrong in the sense that you
6 should have only identified paragraph -- modules 103
7 through 105?

8 MR. MANSKE: Objection to form.

9 THE WITNESS: I think neither is wrong.
10 They both are true. There is no requirement that
11 every single time a mention of classifiers is -- I
12 would -- sometimes list 104 only, 105 only. I don't
13 know why we are assuming that an absence of
14 something assumes that then -- that there was a
15 mistake being made.

16 BY MR. MARANDO:

17 Q Okay. So you don't want to change paragraph
18 89, and you don't want to change paragraph 186;
19 right?

20 A That's correct, yeah.

21 None of these paragraphs were written with
22 the expectation that somebody would construe them as
23 being that nothing else was possible. If there's a
24 positive affirmation of something six, seven times
25 in the declaration, I would not read into its

1 absence in one place as being indicative of an
2 inconsistency or failure in reasoning or a typo.

3 Q In paragraph 187, if you turn back to that.

4 A Yeah. Actually, sorry, I spoke too soon.
5 Let me get there. Yes, I am there. Okay.

6 Q All right. So you state that:

7 "The use of artificial neural networks to
8 perform feature extraction tasks, including for
9 example segmentation or identification" -- I think
10 there's a missing preposition, but -- "of objects in
11 medical images, was well known prior to the priority
12 date of the patent."

13 Do you see that?

14 A Yup.

15 Q And you're citing Exhibit 1007 in
16 Exhibit 1014 per that statement; right?

17 A Yes. Well, yeah, those are listed there.
18 C, for example.

19 Q Well, let me clarify something before I ask
20 another question.

21 So your opinion is that Krishnan anticipates
22 limitation 30B; right?

23 A That's true. Yes.

24 Q You don't have an opinion that Krishnan
25 renders limitation 30B obvious in your declaration;

1 right?

2 A No.

3 Q Sorry. I need to ask that again just for
4 clarity of the record.

5 So it's correct that you don't have an
6 opinion that Krishnan renders limitation 30B
7 obvious.

8 That's correct; right?

9 A The declaration is only talking as to
10 Krishnan anticipating 30B. It is not talking
11 about -- about obviousness for 30B.

12 Q Okay. Thank you. And I or your counsel can
13 explain why I have to ask the question twice later,
14 but I'm not trying to be obnoxious, I promise, on
15 that issue.

16 So as -- so withdraw that.

17 So do you know when Exhibit 1007 was filed?

18 A I think 2015, 2016, maybe.

19 Q 2015 is right.

20 And do you know when Exhibit 1014 was
21 published?

22 A Around the same time, 2016, maybe.

23 Q It was 2016. You're right.

24 A All right.

25 Q So these exhibits were filed and published

1 ten years after Krishnan; right?

2 A Yeah. And we've also -- I've also included
3 references that date back 15 years before Krishnan
4 that also speak to feature extraction and neural
5 networks. They just aren't cited in this place. So
6 yes, the ones that were highlighted here are -- do
7 follow Krishnan. That is not to say that there are
8 not many that precede it. It's just -- it's true
9 that in this paragraph they're not listed.

10 Q So what references are you referring to?

11 A LeCun would be a good example, 1990, cited
12 20,000 times, multilayer neural network used in
13 feature extraction and classification.

14 Q Didn't cite LeCun for your analysis of 30B,
15 though; right? That's correct?

16 A It's not listed there, yeah, I agree. I
17 mean, what was listed there was not trying to in
18 some sense say that only things in 2015 or 2016 were
19 relevant; but those are the dates of those examples.
20 That's correct.

21 Q And you weren't trying to show what known
22 techniques for segmentation and filtering were in
23 2005; right, because you were analyzing this from
24 the 2018 perspective.

25 Is that true?

1 MR. MANSKE: Objection.

2 THE WITNESS: Yeah, the -- the -- say,
3 running through the declaration is multiple
4 references to older material, describing a
5 longstanding field that dates back 30-some years.
6 However, in this particular section, there was no
7 attempt to try to make that -- you know, trying to
8 dig out references that had to be -- pre-2005. That
9 wasn't the sort of time framing that was being
10 attempted here.

11 BY MR. MARANDO:

12 Q Okay. Can you turn to paragraph 189,
13 please.

14 A Yes.

15 Q So it's your opinion that Krishnan performs
16 the function recited in 30C for the reasons already
17 provided for 21C; is that right?

18 A Yes.

19 Q And then in paragraph 193 -- let me know
20 when you're there.

21 A Yep. You're going to make it 21D, 30D now
22 that you -- okay, sorry. Go ahead.

23 (Reporter clarification.)

24 BY MR. MARANDO:

25 Q So it's your opinion that Krishnan performs

1 the function recited in 30D for the reasons already
2 provided for 21D; right?

3 A Yes.

4 Q And then --

5 A But I was just going to say that the
6 obligation here for 30D because of this means for is
7 to detail that neural network disclosure aspect in
8 Krishnan. But yes, otherwise, there is no
9 difference to 21D and 30D.

10 Q So then for Claim 30, are you specifically
11 relying on a classifier embodiment?

12 A Yes.

13 Q You're not relying on template-based methods
14 or database querying for Claim 30?

15 A Those, no.

16 Q So does your opinion on Claim 30 rest on the
17 assumption that module 102 can be implemented as a
18 classifier and can be implemented as a neural
19 network?

20 A Yes.

21 Q All right. Let's move forward to paragraph
22 209.

23 A We're in my second half of the printout.
24 All right.

25 Q We're making progress.

1 A Okay. I'm there. This is Claim 3?

2 Q That's right.

3 A Yeah.

4 Q So we're in ground B now.

5 A Yeah.

6 Q Ground B is Krishnan in view of Chan?

7 A Uh-huh.

8 Q And in paragraph 209, you're analyzing
9 Claim 3?

10 A Yup.

11 Q And in paragraph 209, you state that:

12 "Chan could therefore be implemented in
13 Krishnan by adding the neural network classifier
14 described in Chan with little to no modification to
15 the bank of classifiers."

16 Correct?

17 A That's true.

18 Q Okay. Well, let me ask you: Is it with
19 little modification, or is it with no modification?

20 A I will say no modification. I don't -- no
21 modification.

22 Q So in Krishnan, the classifiers in modules
23 103 through 105 receive extracted features from
24 module 102 as their input; right?

25 A Yes.

1 Q In your proposed combination, what input
2 would Chan's neural network receive?

3 A Chan's neural network is -- is the -- would
4 receive an image -- it would sort of be analogous to
5 102, receiving image.

6 Q So in your combination, you're not replacing
7 Krishnan's feature extraction module, 102, with
8 Chan's neural network; is that right?

9 A No, I am.

10 Q Okay. So your combination removes module
11 102 through 105 from Krishnan? Is that the
12 combination?

13 A Well, we're only dealing with view
14 classification here. Right. Actually, we're only
15 dealing with the first network. So yes, at this
16 point, really all that's relevant is 102 because
17 we're just talking about feature extraction. So
18 Chan is being inserted for performing feature
19 extraction or the parts of Chan that perform feature
20 extraction are being inserted here in lieu of 102.

21 Q So what parts of Krishnan remain in your
22 combination of Krishnan and Chan?

23 A It's not that the parts remain. It's that
24 the view -- so the view identification module can be
25 fed extracted features via Chan's neural networks.

1 Q So none of modules 102 through 105 remain in
2 your combination?

3 MR. MANSKE: Objection. Form.

4 THE WITNESS: No, I said that in this case,
5 Chan is supplying the feature extraction. So 102 is
6 being replaced and then 103 can remain the way that
7 -- that Krishnan would use it or it can also be a
8 neural network classifier and be replaced by Chan
9 also. In this claim, really the focus is really
10 just on the feature extraction portion of this.

11 BY MR. MARANDO:

12 Q So you're replacing module 102, you're
13 leaving module 103, and you're adding Chan's neural
14 network; is that right?

15 A For the purpose of this claim, yeah. The
16 purpose is the feature extraction portion can be
17 replaced with Chan's neural network or parts of
18 Chan's neural network. Chan has a very multistep
19 neural network. So...

20 Q Can you turn to paragraph 215.

21 A Uh-huh.

22 Q All right. So this is an analysis of the
23 Claim 4. Also in the combination of Krishnan and
24 Chan; right?

25 A Yup.

1 Q You state in paragraph 215 that:

2 "If a POSITA could merely add Chan's T-RNN
3 to Krishnan's bank of classifiers to perform the
4 same functions already described in Krishnan which
5 would be a routine change requiring little to know
6 [sic] experimentation on the part of the POSITA."

7 Do you see that?

8 A Yup.

9 Q "K-n-o-w" should be "n-o"; right?

10 A I think -- where are you -- which line are
11 you on?

12 Q It's the last line of paragraph 215.

13 A Yeah, that's n-o, no. Not k-n-o-w. But
14 n-o, yes.

15 Q Gotcha.

16 Okay. So is it with little experimentation
17 or no experimentation?

18 A I'd say little here, I mean, I feel like
19 this is very subjective. I don't know what it means
20 exactly for something to be little or no. It's
21 difficult for me to imagine that somebody can do
22 nothing at all and it would work immediately. So
23 let's put it at little. Conceptually nothing is
24 little -- conceptually it's none; but from an
25 implementation standard, it would be some effort to

1 do it.

2 Q Did you identify the experimentation that
3 would be needed in order to make the combination in
4 your declaration?

5 A No, it's not exclusively stated. The
6 assumption here is that a POSITA would be able to --
7 with the background that I specified would be able
8 to implement this without -- without any additional
9 details provided.

10 Q In your proposed combination, what input
11 would Chan's neural network receive?

12 A A receiving image.

13 Q And is the combination removing module 102
14 from Krishnan and keeping Krishnan's other modules
15 and then adding Chan's network, or can you explain
16 what the combination is?

17 A Yeah, so 102 is replaced by feature
18 extraction. That's sort of the necessary part of
19 this claim. Whether or not Krishnan's
20 classification module is kept or is replaced is not
21 something I'm sort of describing as being important
22 to this claim.

23 Q So in your combination, the classification
24 module of Krishnan -- see if I can find Krishnan.
25 I've got it somewhere.

1 So what are you referring to as the
2 classification module?

3 A Oh, did I say "classification" module? I
4 meant -- sorry, I meant view identification module.

5 Q So that's module 104?

6 A Yeah.

7 Q So that module is part of the combination of
8 Krishnan and Chan?

9 A Module 104 can remain or be replaced. And
10 the challenge here is defining where is the --
11 what's the end of the feature extraction and what's
12 the beginning of the -- of the view identification.
13 This is a problem with 0292, is how does one
14 describe a place where one ends and the other begins
15 in the context of a neural network.

16 So for the purpose of this claim, I'm saying
17 that what matters is the feature extraction aspect
18 of Chan which will at the end of it have output
19 extracted features; and that can be taken in by 104,
20 whatever implements 104 are or it can be taken in
21 by -- one of which could be a neural network as
22 specified in Chan. So it's -- I'm not being
23 specific in terms of that because it's not, I think,
24 necessary for this particular claim.

25 Q Is Chan's neural network, is that an

1 end-to-end neural network?

2 (Reporter clarification.)

3 THE WITNESS: Sorry.

4 My question was, as to how it's trained.

5 "End to end," in my mind is a training question, not
6 an implementation question.

7 BY MR. MARANDO:

8 Q Yeah. Is -- okay. Well, you are the
9 expert, so I might ask imprecise questions.

10 As to how it's trained, is Chan's neural
11 network an end-to-end network?

12 A The way Chan describes it, it does not look
13 like that. It looks like they train the CNN first
14 and then have fixed weights and then train the LSTM
15 after. That's at least the way that it looks like
16 it's written.

17 Q So to summarize: Your combination of Chan
18 and Krishnan does require a replacing module 102 of
19 Krishnan, and it may require or not require
20 replacing module 104 if you haven't taken a position
21 on whether module 104 is or isn't included.

22 Is that fair?

23 A That's fair. The need to take a position
24 comes later on as the claims become more specific.

25 Q For Claim 5, which is in paragraph 220.

1 A Uh-huh.

2 Q So your opinion on Claim 5 is that a POSITA
3 would have been motivated to and would have had a
4 reasonable expectation of success in combining
5 Krishnan and Chan for the same reasons that you
6 described regarding Claims 3 and 4; is that right?

7 A Yes.

8 Q And moving to paragraph 223, which is your
9 analysis of Claim 6, is it also your opinion that
10 the motivation to combine and the reasonable
11 expectation of success the same reasoning as Claims
12 3 and 4 apply to Claim 6?

13 A Yes. Krishnan is broad enough in I would
14 describe that feature extraction step that one could
15 readily understand how to combine Chan with it,
16 swapping in feature extraction convolutional neural
17 network into Krishnan's feature extraction module.

18 Q So I can go through them one by one. But,
19 you know, for Claims 7, 8, 23, 24, 25, and 26, are
20 you just relying on your earlier motivation to
21 combine and reasonable expectation of success that
22 we've already talked about --

23 A Yeah.

24 Q -- for Chan -- or Krishnan and Chan?

25 A Yes. Nothing different there.

1 Q Okay. Let's go to paragraph 240.

2 A Ground C?

3 Q Yes, we're in ground C. This is your
4 combination of Krishnan in view of Aase?

5 A Uh-huh. Aase or "Aase."

6 Q Aase?

7 A Yeah, I think so. I'm not sure what
8 language that is, but yeah.

9 Q So feel free to familiarize yourself with
10 paragraphs 240 through 248. I have a question about
11 paragraph 247. So I'll let you read those
12 paragraphs to yourself, and then I'll ask you a
13 question.

14 All right. So in paragraph 247, you state
15 that:

16 "Combining these aspects of Krishnan and
17 Aase," A-a-s-e --

18 A Uh-huh.

19 Q -- "would not require any material
20 modification or experimentation on the part of the
21 POSITA, and the result would render Claims 9 and 27
22 obvious."

23 A Uh-huh.

24 Q Do you see that?

25 A Yup.

1 Q So would the combination require any
2 modification or experimentation?

3 A Is this the "little to no" again?

4 Q Similar.

5 A So nothing material. We'll stick with
6 what's listed here.

7 Q Are there any modifications that you
8 considered when you proposed the combination?

9 A No. I mean, in this case, because Aase is
10 taking an image input, we would swap out 102, 104,
11 and 105 to be able to match up to what's described
12 here.

13 Q So your combination replaces 102, 104, and
14 105 in Krishnan?

15 A Yeah.

16 Q Krishnan's module 103 is still in the
17 combination?

18 A I don't know. I mean, Krishnan's module 103
19 doesn't really have any role in -- the anatomic
20 identification doesn't have any role here.

21 Q So 103 is not part of your combination for
22 claim -- Claims 9 and 27?

23 A No.

24 Q No, it's not?

25 A No, it is not part of the combination.

1 Q So Aase -- or Aase's neural networks, they
2 received images as inputs; is that right?

3 A Yes, I believe so.

4 Q If modules 102, 103, 104, and 105 are
5 removed from Krishnan, what remains of Krishnan in
6 your combination?

7 A Krishnan has -- the workflow is Krishnan,
8 meaning that the input, the storage, the IO, all of
9 that can still be there but it's -- so from an
10 obvious standpoint, the original workflow that is
11 being described is still sound. The specific
12 modules that we've described are being replaced.

13 Q The workflow is remaining, but modules 102
14 through 105 are removed; is that right?

15 A Uh-huh.

16 Q So can you point me to where you described
17 that combination in your declaration?

18 A The functions are listed. Modules are not
19 listed, but that's not really important. The
20 functions -- so in 245, for example, there is
21 reference to the extracted features from Krishnan;
22 and then in 246, there's references to the quality
23 assessment and view category. So the functions are
24 there. Functions can be mapped to modules if one
25 wants, but ultimately the point is the functions are

1 there and the functions are being replaced.

2 Q And where did you say that modules -- in
3 what paragraphs are you saying that modules 102
4 through 105 in Krishnan are removed in the
5 Aase-Krishnan combination?

6 A I'm saying that 245 and 246 describe the
7 aspects of Krishnan that are compatible with Aase
8 and so the modules are not listed explicitly, but
9 the function's mapped at the modules.

10 Q Do 245 and 246 say that you have replaced
11 those functions with Aase -- Aase?

12 A I read them as such. The word -- the word
13 "replace" is not explicitly being mentioned there.
14 It's understanding the implementation. It's not --
15 it's not a brick-by-brick, take-apart-and-swap-out
16 description in this section.

17 Q Is there a sentence or is there language in
18 245 and 246 that you're interpreting as suggesting
19 replacing Krishnan's modules 102 through 105 with
20 Aase's neural network? Just looking for something I
21 can read.

22 A I think -- I read 245, "Krishnan extracts
23 features from a set of ultrasound images" --

24 (Reporter clarification.)

25 THE WITNESS: Okay.

1 "Krishnan extracts features from a set of
2 ultrasound images and inputs the extracted features
3 into a bank of classifiers that perform the
4 functions of new identification and quality
5 assessment, while Aase explicitly includes a view
6 category, a specific neural network classifier, and
7 a quality assessment value-specific neural network
8 classifier for handling these tasks."

9 So that was intended to describe this
10 functional swap and replacement.

11 BY MR. MARANDO:

12 Q All right. So you're relying on paragraph
13 245 for explaining the combination as swapping out
14 102 through 105 and replacing it with Aase?

15 A And then 246:

16 "A POSITA would recognize that a" --
17 (Reporter clarification.)

18 THE WITNESS: Okay.

19 "A POSITA would recognize that a simple and
20 elegant implementation of Krishnan's disclosure is
21 to implement separate function-specific classifier
22 modules to perform each function contemplated for
23 the bank of classifiers."

24 BY MR. MARANDO:

25 Q Okay. And you're relying on that. That's

1 where your opinion is that -- about the combination
2 of Krishnan and Aase removing Krishnan's modules 102
3 through 105 and replacing them with Aase's neural
4 network?

5 A Yes.

6 Q Can you go to paragraph 252.

7 A Yes.

8 Q So here you state that:

9 "The combination of Krishnan and Aase
10 teaches and suggests inputting the extracted
11 features from a set of ultrasound images into
12 separate quality assessment and view
13 identification-specific neural network classifiers
14 as claimed."

15 Is that right?

16 A Yes.

17 Q So is this statement -- does this apply to
18 your combination of Krishnan and Aase for Claims 9,
19 10, 27, and 28?

20 A Does that statement apply?

21 Q Yes.

22 A I think the intention here is the same which
23 is replace 102 through 105 with Aase's view quality
24 assessment and view identification which should
25 achieve extraction of features from an image and

1 feeding them into a view identification and quality
2 assessment. Whether that extraction happens in the
3 context of a network or something else is not
4 specified here; but the idea is that if you feed a
5 raw image, there has to be an extraction step before
6 you're able to do quality and view identification.
7 So some layers are going to have to do that.

8 Q In your combination, Aase's neural network
9 classifiers receive extracted features from
10 ultrasound images; is that correct?

11 A No, they receive -- well, they receive
12 images, but the initial layers are likely going to
13 do feature extraction for the purpose of view
14 classification and quality assessment. So they're
15 receiving images as their input. They're performing
16 initial feature extraction from those and then able
17 to take those extracted features for new
18 identification and quality.

19 Q What are the initial layers that you're
20 relying on in this combination?

21 MR. MANSKE: Objection.

22 THE WITNESS: That's -- POSITA's
23 understanding of how neural networks work in terms
24 of performing image classification tasks, which are
25 what these are.

1 BY MR. MARANDO:

2 Q So are you relying on a POSITA's
3 understanding or disclosure in Aase?

4 A Let me look to see if they spell it out
5 well.

6 So Aase does describe a multilayer deep
7 neural network. However, they are not explicitly
8 partitioning parts of it as being featured
9 extraction and parts of it as being -- feeding those
10 extractions into view and quality.

11 Q So you rely on a POSITA's understanding for
12 the initial layers?

13 A Yes.

14 Q Can you go to paragraph 255, please.

15 A Ground D, yes.

16 Q So we're in ground D. In paragraphs 255
17 through 263, you're describing a combination of
18 Krishnan, Chan, and Wu; is that right?

19 A That's correct. Yes.

20 Q Is Krishnan's automatic feature analysis
21 module 102 part of your combination of Krishnan,
22 Chan, and Wu?

23 A When you say "part of" it, meaning do I
24 imagine swapping it out?

25 Q Exactly.

1 A Yes.

2 Q So 102 is removed in the combination?

3 A Yes.

4 Q So what modifications would be made to
5 Krishnan in order to combine it with Chan and Wu?

6 A So this would be -- this is sort of similar
7 to our prior discussion in that the feature
8 extraction portion of it -- and are we talking about
9 12 only? Are we talking about 12 at this point?

10 Q Sure. You can focus on Claim 12.

11 A Sorry. Give me a moment here. I'm going to
12 reread 12. So for 12 alone, 102 needs to be swapped
13 out and then it's optional whether or not the distal
14 classifiers focus on a new category or quality
15 assessment need to be swapped.

16 Q Are you taking a position in your
17 declaration as to whether the modules 103, 104, and
18 105 are part of that combination or not from
19 Krishnan?

20 A So because the training extends all the way
21 to the view -- the view classification and -- so
22 yeah, the view classification -- the view
23 identification and quality assessment, then the
24 actual sort of 102 through 105 should be removed for
25 that to be matched up in terms of training.

1 Q So are we using Chan's neural network or
2 Wu's in the combination?

3 A I think in this particular one -- so my
4 understanding of obviousness was largely that you
5 were describing possibilities that could be used
6 that would achieve what is happening in '029. So
7 either Chan or Wu would satisfy that.

8 Q Okay. You're not taking a position whether
9 it's Chan or Wu; is that right? It could be either?

10 A Yeah. Yeah.

11 When we do get to recurrent neural networks,
12 then I have to use Chan.

13 MR. MANSKE: Why don't we take our break.
14 We're at the hour.

15 THE VIDEOGRAPHER: Okay. The time is
16 10:59 a.m.

17 We're off the record.

18 (Recess.)

19 THE VIDEOGRAPHER: The time is 11:16 a.m.

20 We're back on the record.

21 BY MR. MARANDO:

22 Q All right. Could you turn to paragraph 267,
23 please.

24 A Yes.

25 Q All right. So here, I believe you're

1 describing your opinions regarding training
2 Krishnan's classifiers; is that right?

3 A Yes. That's correct.

4 Q And it's your opinion that the output of
5 Krishnan's trained classifiers would either be a
6 continuous score such as a numeric value between 0
7 and 1 or a scaled value?

8 A Yeah. I mean, this is -- I believe a POSITA
9 would understand from prior examples of quality
10 scoring or more generally regression outputs, that
11 that would be possible things that could be output
12 from these types of models.

13 Q So the two possible things are a continuous
14 score or a hard threshold is applied to the
15 continuous score, a binary output, 0 or 1; is that
16 right?

17 A Yeah. That would be one sort of embodiment
18 of that. You could even have a categorical with
19 multiple classes if you want, but yeah, these would
20 all be sort of be understandable to a POSITA.

21 Q So it's your opinion, then, that Krishnan
22 doesn't specify whether the classifier output is a
23 continuous score or a binary output. It could be
24 either one, but those are the possibilities that a
25 POSITA would understand; is that right?

1 A Yeah, let me just double-check. Sounds like
2 it, but I believe -- yeah, Krishnan is broad on what
3 sort of outputs could be provided from their quality
4 module.

5 Q So Krishnan teaches that the classifier
6 output could be one of these two things, but it's
7 not necessarily one or the other?

8 A One second, actually. I'm not sure that's
9 what's being said. Krishnan explicitly just says --

10 (Reporter clarification.)

11 THE WITNESS: Sorry. I've not learned
12 anything in five hours.

13 Okay. Moreover, this is in paragraph 36:

14 "Moreover, for image quality assessment, the
15 medical images may include a quality score within a
16 predefined range that provides an indication" --
17 they don't actually state that -- "a diagnostic
18 quality level of the medical images."

19 The statement in the declaration is my
20 experience in that space of how a POSITA will
21 have -- would have seen different examples in the
22 literature about what sort of output there is.

23 BY MR. MARANDO:

24 Q So when we're talking about your opinions
25 regarding Krishnan's classifier on limitation 12B,

1 is it your opinion that Krishnan teaches the
2 classifier output could be a score or could be
3 binary, but doesn't necessarily disclose one or the
4 other?

5 A That's correct. Yes.

6 Q For limitation 12D which is in paragraphs
7 272 through 273.

8 A Uh-huh.

9 Q So it's your opinion that Krishnan teaches
10 or suggests limitation 12D; is that right?

11 A Krishnan, in view of Chan and Wu, yes.

12 Q Well, in your paragraphs 272 through 273,
13 you say Krishnan teaches or suggests 12D; right?

14 A So my opinion as given in the intro to 12
15 and in the claims table is that this is an
16 obviousness argument with Krishnan in view of Chan
17 and Wu. You are correct in saying that they're not
18 once again brought in explicitly in those two
19 paragraphs, but the assumption was that whoever is
20 reading this will have already read the introduction
21 for 12 and would understand it as well as from the
22 subsequent dependent claims.

23 So whether or not it's explicitly here or
24 not is, I think, not to be interpreted as being that
25 Krishnan alone is carrying all of the weight for

1 this sub claim.

2 Q You don't cite Chan or Wu for limitation
3 12D; right?

4 A The assumption was that it was cited already
5 in the intro to 12, but it is not again cited where
6 you are seeing it.

7 Q And the topic sentence of this section is
8 that Krishnan teaches or suggests 12D to a POSITA;
9 right?

10 A Again, with the expectation that the reader
11 would have already read the preamble describing
12 Krishnan, Chan, and Wu, and relevance to training to
13 12D. But yes, you're correct, that 272 opens with
14 "Krishnan teaches."

15 But the dependent claims that are sort of
16 tied tightly to 12D are very clear on Krishnan,
17 Chan, Wu, Krishnan, Chan, Wu, again and again. So
18 the absence of it should not be read to mean
19 anything in this 12D.

20 Q Limitation 12D, you're relying on Krishnan's
21 neural network classifiers as disclosing the
22 limitation; right?

23 A Krishnan and Chan and Wu. Yes.

24 Q Well, that's not what you say in your
25 declaration; right? So are you revising your

1 declaration?

2 A No, I am saying that one should not read the
3 fact that it is not again written there as being
4 that I'm not using Chan and Wu, the introduction and
5 subsequent pretty much every single page for the
6 next five, six pages says Krishnan and Chan and Wu.
7 So I'm not -- I'm not revising the declaration. I'm
8 just explaining how one should read it.

9 Q All right. Let's go through paragraph 272
10 and 273. So in paragraph 272, you cite Krishnan and
11 state that it teaches or suggests 12D to a POSITA;
12 right?

13 A I say that, yeah.

14 Q You do not state in paragraph 272 that Chan
15 or Wu teaches or suggests 12D to a POSITA; right?

16 A I would have assumed they already knew that
17 was my opinion, but it did not repeat it again
18 later.

19 Q In paragraph 273, you say that:

20 "Krishnan trains one or more neural network
21 classifiers to perform view identification and
22 quality assessment using training data from the
23 database 106 of previously diagnosed/labeled cases."

24 Do you see that?

25 A I do, yes.

1 Q The next sentence refers also to Krishnan.

2 Do you agree?

3 A Yes. But by then, they would have already
4 known that it's Krishnan and Chan and Wu; but it did
5 not repeat it, I agree.

6 Q Well, there is no citation to Chan or Wu in
7 the sentence; right?

8 A That's correct. Yeah.

9 Q All right. And there's no citation in any
10 of the paragraphs for limitation 12D specifically to
11 Chan or Wu.

12 Isn't that right?

13 A As I said before, it was all done in the
14 preamble and is subsequently in dependent claims.
15 But no, you're correct in those three paragraphs --
16 or two paragraphs, sorry, two paragraphs, it's not
17 repeated again. Though my opinion is that this is
18 an obviousness claim of a Krishnan and Chan and Wu.

19 Q You're not changing the text of 272 or 273
20 today; right? You stand by those paragraphs?

21 A Yeah, I feel like the -- an intelligent
22 reader would realize that this is Krishnan and Chan
23 and Wu and not -- and not solely Krishnan here.

24 Q Krishnan's modules 103, 104, and 105 each
25 received extracted features as inputs; correct?

1 A Krishnan's -- yeah, 102 is the only one in
2 Krishnan that would receive an image directly. But
3 103, 104, 105 would receive extracted features, yes.

4 Q You do not cite module 102 for limitation
5 12D; right?

6 A I don't cite any of those modules here.
7 They've already been heavily cited before as being
8 supported by classifiers. So there is no obvious
9 need to recite them here. And then in the dependent
10 claim, for example, 279, next page, it's very clear
11 that there is discussions of the feature extraction
12 step also being a feature extraction neural network
13 for training.

14 Q You're talking about a different claim now;
15 right? Not Claim 12?

16 A 14 dependent on 12, but yes.

17 Q Okay. Do you see where you say in paragraph
18 273 that a POSITA would likewise understand the
19 training would entail using the training images as
20 input to the neural network in adjusting the neural
21 network parameters based on the training labels
22 associated with the images being the desired output
23 of the neural network?

24 A Yup.

25 Q You're citing Exhibit 1018 for that; is that

1 right?

2 A That's one example being given. But yes,
3 that's the example in this paragraph.

4 Q Right. There's no other example in this
5 paragraph; right?

6 A There's no -- yeah, there's examples
7 elsewhere; but this is the example provided in this
8 paragraph, yes.

9 Q And Exhibit 1018, that is not a reference
10 that's part of your obviousness ground; correct?

11 MR. MANSKE: Objection. Form.

12 THE WITNESS: 1018 is background material
13 that a POSITA would understand, having already
14 realized that 102 can be implemented by a neural
15 network classifier, they would see this to be an
16 obvious way that it would be trend. 1018 is one
17 example of how one would do that, but it's speaking
18 more to the POSITA's background level of
19 understanding and knowledge.

20 BY MR. MARANDO:

21 Q Ground D which I believe we're on; right?
22 Ground D is Krishnan's view of Chan and Wu; right?

23 A Yes.

24 Q So Exhibit 1018 is neither Krishnan nor Chan
25 nor Wu; right?

1 A That's correct.

2 Q All right. So Exhibit 1018 is not a
3 reference in your obviousness ground for this claim;
4 right?

5 A No, it's of course the POSITA would likewise
6 understand that training statement, but it is not --
7 it's not prior art being used for obviousness.

8 Q So Exhibit 1018 was filed in 2017. Does
9 that sound right to you?

10 A Yup.

11 Q Exhibit 1018 is not specifically discussing
12 how to train Krishnan's classifiers; right?

13 A It supports just a POSITA's understanding of
14 training and neural network. Imaging, adjust
15 weights, standard stuff that would be expected.

16 Q So Krishnan uses -- withdraw that.

17 Krishnan's classifiers 103, 104, and 105
18 take extracted features -- withdraw that since I
19 said "images."

20 Krishnan's classifiers 103, 104, and 105
21 take extracted features as inputs to a neural
22 network; right?

23 A Yes. 102 is the only one that is listed as
24 taking in images, raw images.

25 Q If your opinion that 102 is a classifier is

1 wrong and the board disagrees with it, do you have
2 an obviousness opinion for Claim 12D?

3 MR. MANSKE: Objection. Form.

4 (Simultaneous colloquy.)

5 (Reporter clarification.)

6 THE WITNESS: My answer was Chan and Wu.

7 So if the board were to decide that 102
8 cannot be used as a classifier with an image as an
9 input, then Chan and Wu would be part of the
10 obviousness -- well, Chan was still there, but Chan
11 and Wu then carry that weight.

12 BY MR. MARANDO:

13 Q So you would need to change your analysis of
14 12D then, right, because you would have to explain
15 Chan and Wu?

16 A No. 12D already including Chan and Wu.

17 Q Well, you haven't explained where Chan and
18 Wu is used in the combination for 12D; right?

19 MR. MANSKE: Objection.

20 THE WITNESS: It's explained in the
21 preamble.

22 BY MR. MARANDO:

23 Q Well, I'm asking about limitation 12D,
24 though.

25 A The preamble is -- applies to A, B, C, and

1 D -- not the preamble, the introduction to Claim 12.
2 I misspoke.

3 The introduction to Claim 12 spans across A
4 through D, whether certain text was repeated in
5 these two paragraphs is not in my -- not, in my
6 opinion, relevant; but I'll leave that to the board
7 to decide in terms of how they read the text and the
8 draftsmanship that's there.

9 Q So as far as your specific section on 12D,
10 if Krishnan is not a classifier -- I'm sorry, if
11 module 102 is not a classifier, you would be relying
12 on Chan and Wu but not based on your analysis of
13 12D, based on your introductory analysis; is that
14 right?

15 MR. MANSKE: Objection.

16 THE WITNESS: No. So my opinion and
17 analysis of 12D is described throughout 12 and just
18 as to whether or not the exact words are repeated
19 again, it's -- that's in my mind not relevant. The
20 statements have already been made as to how Chan and
21 Wu relate to training, and so it's a drafting issue
22 rather than an analysis problem when it comes to how
23 it's being displayed here.

24 So there would be no need to change anything
25 in terms of the obviousness claim for Krishnan with

1 Chan and Wu if the board were to decide that 102
2 could not be seen as a neural network classifier.

3 BY MR. MARANDO:

4 Q In paragraph 273, you refer to limitations
5 12A, 12B, and 12C; right?

6 A There is a reference to those, yes.

7 Q So you don't refer back to your earlier
8 discussion of Claim 12 or the discussion of the
9 preamble; right?

10 A I think it's implicit that -- what's the
11 point of an introduction if you're not expecting
12 that it carries into the actual claims. I don't
13 know what the purpose would be. The assumption is
14 that somebody will have read and carried it through
15 to all the sub-claims that are there.

16 Q Okay. So your analysis, if a classifier --
17 module 102 is not a classifier, is implicitly
18 relying on earlier discussion that's not explicitly
19 incorporated into limitation 12D; is that right?

20 A I -- this was written with the idea that the
21 introduction explicitly describes the material
22 relevant for 12A, B, C, and D. Not that they have
23 to implicitly guess something that is relevant, but
24 that that would have been explicitly stated as to
25 how it supports A, B, C, and D.

1 Q Limitation 12D, there's nowhere you
2 explicitly incorporate your analysis of Claim 12
3 earlier or limit the preamble; correct?

4 A Paragraph 272 and 273 do not repeat the
5 material that was already present in the
6 introduction. I won't call it an analysis. I would
7 just say from a draftsman's standpoint, those
8 paragraphs do not repeat the same passages that were
9 present earlier.

10 Q And they don't explicitly incorporate them
11 either; right?

12 A They're assuming that they were read -- they
13 are incorporated in this, yes.

14 Q Where do you explicitly incorporate them?

15 A The expectation is the reader would
16 know that Krishnan -- so let's say it's
17 reading actually both 272 and 273, the -- my
18 expectation is that they will have already read the
19 introduction to 270 -- to 12, and so when they're
20 reading about training these images -- sorry,
21 training these networks, the images being input,
22 they would already have known that from the
23 introduction.

24 So it's not repeated. I agree with you, but
25 it is the same -- the same material that was present

1 and the introduction has been repeated here. Just
2 what's missing is the explicit callout to Chan and
3 Wu.

4 Q Understood. My question is just very
5 straightforward: There's no explicit callout to
6 Chan and Wu in limitation 12D; is that right?

7 A They're not -- they're not directly cited
8 here.

9 (Discussion off the record.)

10 THE VIDEOGRAPHER: The time is 11:41 a.m.

11 We're off the record.

12 --oOo--

13 (Whereupon, the Stenographic Court Reporter,

14 CHERYL HAAB SCOTT, CSR, was relieved by

15 JUDY ARMSTRONG, CRR, who transcribed the

16 remainder of the proceedings.)

17 --oOo--

18 (Time noted: 11:41 a.m. PT/2:41 p.m. ET)

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DECLARATION UNDER PENALTY OF PERJURY

I, RAHUL C. DEO, M.D., Ph.D., do hereby certify under penalty of perjury that I have read the foregoing transcript of my deposition taken on Friday, April 17, 2026; that I have made such corrections as appear noted herein; that my testimony as contained herein, as corrected, is true and correct.

DATED this _____ day of _____ ,
2026, at _____ , _____ .
City State

RAHUL C. DEO, M.D., Ph.D.

CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

The undersigned Certified Shorthand Reporter and
Deposition Notary Public of the States of California,
Washington and Nevada does hereby certify:

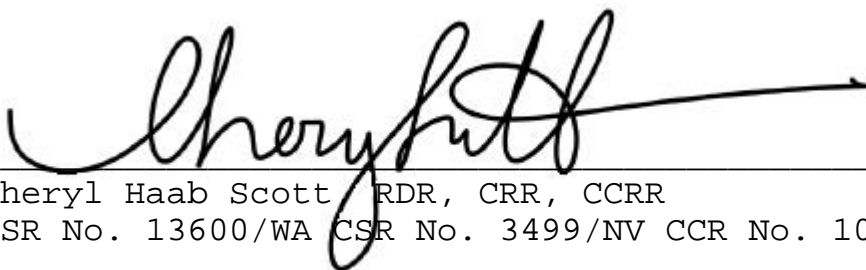
That the foregoing deposition was taken before me
remotely at the time therein set forth, at which time the
witness was duly sworn by me;

That the testimony of the witness and all
objections made at the time of the deposition were
recorded stenographically by me and were thereafter
transcribed, said transcript being a true and correct copy
of the proceedings thereof.

I further certify that I am neither counsel for
nor related to any party to said action, nor in any way
interested in the outcome thereof.

Further, that if the foregoing pertains to the
original transcript of a deposition in a federal case,
before completion of the proceedings, review of the
transcript was not requested/offered on the record.

In witness whereof, I have subscribed my name,
this date: April 20, 2026


Cheryl Haab Scott RDR, CRR, CCRR
CSR No. 13600/WA CSR No. 3499/NV CCR No. 1003

Focus Litigation Solutions
400 Capitol Mall, Suite 1450
Sacramento, CA 95814
Telephone (916) 228-4593
Production@FocusLitigationSolutions.com

April 20, 2026

Rahul C. Deo, M.D., Ph.D.
c/o William E. Manske, Esq.
william.manske@thompsonhine.com

Re: Caption Health, Inc. v. University of British Columbia
Date of Deposition: April 17, 2026

The transcript of your deposition taken in the above-entitled matter has been transcribed. The original transcript will be held for 35 days from the date of this letter before it is sealed and forwarded to the noticing attorney.

You have the right to review, sign and make corrections to your transcript within the 35-day period. Please call the above number, or e-mail to make an appointment for your review. It is our policy not to release the original transcript and complimentary copies are not provided.

If you are represented by an attorney, we advise that you contact your attorney to discuss this matter. If you are an independent witness and have questions, please contact the attorney who requested you to testify or this office for further instructions.

If you wish to waive signature, please sign and date below and return this letter to the above address. In the event you have not read, corrected, and signed your deposition within (30) days of receipt of this letter, it may be used with the full force and effect as though it had been read, corrected, and signed.

Cc: All counsel

DATE

Rahul C. Deo, M.D., Ph.D.

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verbatim (4)
version (1)
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video (1)
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E (3)
VIDEOGRAPHER
 (12)
VIDEOTAPED (2)
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WA (1)
wait (1)
want (24)
wanted (3)
wants (2)
Washington (3)
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ways (2)
web (1)
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weights (2)
Weill (1)

Welcome (2)
well (30)
went (2)
we're (24)
we've (9)
whereof (1)
WILLIAM (2)
william.manske@thom
psonhine.com (1)
withdraw (11)
WITNESS (47)
wondering (1)
word (9)
wording (5)
words (6)
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working (4)
write (1)
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wrong (5)
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