

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

_____ TESLA, INC.,	)	
	)	
Petitioner,	)	IPR2023-01172
	)	
vs.	)	IPR2023-01173
	)	
AUTONOMOUS DEVICES, LLC,	)	U.S. Patent
	)	11,055,583
Patent Owner.	)	
_____	)	

Deposition of ELI SABER, PH.D., taken in
the above-captioned cause, remotely via Zoom,
before Rachel F. Gard, CSR, CCR, RPR, CRR, Notary
Public, commencing at the hour of 10:00 a.m.
Eastern on Friday, June 21, 2024.

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1 I N D E X

2 WITNESS PAGE

3 ELI SABER, PH.D.

4 Cross-Examination by Mr. Stephens 4

5

6

7 E X H I B I T S

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9 EXHIBIT REFERRED TO PAGE

10

11 Number 1001 U.S. Patent 11,055,583 8

12

13 Number 1005 Grotmol reference 8

14

15 Number 1007 Hickman reference 8

16

17 Number 1009 Hoffman reference 8

18

19 Number 2007 Declaration of Eli Saber, 8

20 Ph.D.

21

22

1 (Witness sworn.)

2 WHEREUPON:

3 ELI SABER, PH.D.,

4 called as a witness herein, having been first duly
5 sworn, was examined and testified as follows:

6 CROSS-EXAMINATION

7 BY MR. STEPHENS:

8 Q Welcome back, Dr. Saber. As I just noted
9 offline, my name is Nick Stephens. I'm an
10 attorney with Fish & Richardson, and I'll be
11 taking your deposition today on behalf of
12 petitioner, Tesla Inc.

13 MR. STEPHENS: Would counsel for patent
14 owner like to make their appearance?

15 MR. McCOMMAS: My name is Stuart McCommas
16 with the law firm McKool Smith, and I represent
17 Autonomous Devices, the patent owner, in the case.
18 And with me today is also Arvind Jairam, my
19 colleague.

20 MR. STEPHENS: We're here today regarding
21 the IPR proceedings identified as IPR2023-01172
22 and IPR2023-00173 involving the '583 patent.

1 Q Do you understand that, Dr. Saber?

2 A I think you misspelled the last one. It's
3 01173, not 00.

4 Q Thank you.

5 A If I heard you correctly, I thought I
6 heard a 00.

7 Q Yes, that's correct. So the second
8 proceeding is IPR2023-01173.

9 A That is correct.

10 Q Thank you. This deposition is being
11 transcribed today.

12 Do you understand that?

13 A I do.

14 Q To ensure a clean record, I'll aim not to
15 interrupt while you're providing your answers. I
16 ask you do the same as well while I'm providing
17 the questions.

18 A I will do that.

19 Q If you need a break at any time during the
20 deposition, please feel free to let me know. But
21 in general, I'll aim to take a break every hour or
22 so.

1 Does that sound okay?

2 A That sounds great.

3 Q Great.

4 Can you please state your full name.

5 A Eli Saber.

6 Q And where is your city of residence,
7 Dr. Saber?

8 A I live in Webster, New York.

9 Q Do you understand that you're under oath
10 for today's deposition?

11 A I do.

12 Q Is there any reason that you cannot give
13 truthful and accurate testimony today?

14 A No.

15 Q For the clarity of the record, I'll define
16 several terms that I may use throughout the day.
17 When I use the terms "patent owner," "Autonomous
18 Devices," "Autonomous," or "AD," I'm referring to
19 Autonomous Devices, LLC.

20 Do you understand?

21 A I do.

22 Q And when I use the term "petitioner" or

1 "Tesla Inc." or "Tesla," I'm referring to Tesla
2 Inc.

3 Do you understand?

4 A I do.

5 Q When I use the term "'583 patent," I'm
6 referring to U.S. Patent 11,055,583, which has
7 marked as Exhibit 1001 in this proceeding.

8 Do you understand?

9 A I do.

10 Q And when I use the term "POSITA," I'm
11 referring to a person of ordinary skill in the art
12 at the time of the alleged invention.

13 Do you understand?

14 A I do.

15 Q I also may refer to a number of exhibits
16 over the course of the day, so I'd like to just
17 reference a few of them now.

18 First, do you have with you copies of the
19 exhibits or other papers from the record in these
20 IPRs?

21 A Counsel sent binders of hard copies, but I
22 prefer to have electronic copies. They're too big

1 and hard to manage, so an electronic copy would be
2 what I would like to have.

3 Q Sure. Could I drop them in the chat right
4 now and you can download them?

5 A Absolutely. Please do.

6 (Exhibit Number 1001.)

7 Q The first document I've uploaded is
8 Exhibit 1001.

9 A I see it, and I'm downloading it.

10 (Exhibit Number 1005.)

11 Q Great. The next document will be
12 Exhibit 1005, which is Grotmol.

13 A I see it, and I'm downloading it.

14 (Exhibit Number 1007.)

15 Q And now I've uploaded Exhibit 1007,
16 Hickman.

17 A I have it.

18 (Exhibit Number 1009.)

19 Q And Exhibit 1009, Hoffman.

20 A I have it.

21 (Exhibit Number 2007.)

22

1 Q Great. And finally, Exhibit 2007, which
2 is the declaration that you submitted, Dr. Saber.

3 A Will be asking any questions about my CV?

4 Q I don't plan to today.

5 A Okay. So I have Exhibit 1001, 1005, 1007,
6 1009, and 2007.

7 Q Perfect. And so when I refer to
8 "Grotmol," just to be clear, I'll be referring to
9 Exhibit 1005.

10 When I refer to "Hickman," I'll be
11 referring to Exhibit 1007.

12 When I refer to "Hoffman," I'll be
13 referring to Exhibit 1009.

14 And any references to your declaration
15 will be a reference to Exhibit 2007.

16 Do you understand?

17 A I do.

18 Q Okay. And the physical copies with you,
19 are they annotated or have you put any notes on
20 them?

21 A No, I have not. They're binders that were
22 shipped from counsel.

1 Q Can you please describe how you prepared
2 for today's deposition?

3 A Yes. I read through my declaration. I
4 read through the patent and the prior art. And I
5 met with counsel.

6 Q Approximately how much time did you spend
7 preparing for the deposition?

8 A Oh, I can't recall off the top of my head.
9 Somewhere between 10 and 20 hours.

10 Q And what documents did you review in
11 preparation for the deposition?

12 A I reviewed my declaration. I reviewed the
13 patent and the prior art that you just uploaded.
14 I reviewed obviously the petition or the patent
15 owner responses.

16 Q And that's the petitions for independent
17 responses in both IPR proceedings?

18 A That's correct.

19 Q Can you describe the process by which you
20 prepared your declaration?

21 MR. McCOMMAS: Before you answer,
22 Dr. Saber, I'll just caution the witness not to

1 reveal the substance of any attorney-client
2 communications. But you can answer the question.

3 A So typically I review the documents very
4 carefully. I prepare a first draft. I have
5 discussions with counsel. And then it's a
6 collaborative and iterative effort to yield the
7 final document, which I carefully review and then
8 sign.

9 Q You carefully reviewed your declaration
10 before signing?

11 A I carefully review every document that I
12 receive.

13 Q Are you currently aware of any errors that
14 exist in your declaration?

15 A No, not off the top of my head. There
16 might be a couple minor typos that I noticed while
17 I was reading it.

18 Q Were there any specific examples of typos?

19 A Not that I recall or I have kept track of.

20 Q They were not, in your view, material to
21 the ability to understand your opinion in your
22 declaration?

1 A No, they were not.

2 Q Have any of your opinions changed since
3 the time that you -- regarding the topics
4 addressed in your declaration since the time that
5 you signed your declaration?

6 A No, they have not.

7 Q All right. I'll refer to your
8 declaration, and let's start with paragraph 73.
9 Just let me know when you're there.

10 A I am.

11 Q And paragraph 73 begins with your
12 discussion of claim 7, correct?

13 A That is correct.

14 Q You reproduced at least part of the claim
15 language from claim 7 in paragraph 73, correct?

16 A That is correct.

17 Q Please feel free to take a moment to
18 review that claim language.

19 A I have reviewed it.

20 Q And you emphasized the last clause that
21 recites: Determining at least partial match
22 between one or more objects detected in the new

1 one or more digital pictures and one or more
2 objects detected in the one or more digital
3 pictures, correct?

4 A That is correct.

5 Q The next paragraph, the last two
6 sentences, you state: Once the objects are
7 detected in pictures as claimed in claim 7, they
8 are separate from the pictures themselves and are
9 therefore different than images or portions
10 thereof in Grotmol. Grotmol does not disclose
11 comparing anything detected in images that is
12 separate from the images and only discloses
13 comparing images or portions, i.e., features,
14 thereof, in my opinion.

15 Did I read that correctly?

16 A You read that correctly.

17 Q I want to ensure that I understand your
18 opinion here, Dr. Saber. Is it your opinion that
19 claim 7 requires a comparison of objects detected
20 in the images rather than a comparison of the
21 images themselves or portions thereof?

22 A Could you repeat the question, please?

1 Q Yes. Is it your opinion in claim 7 that
2 this claim requires a comparison of the objects
3 detected in the images rather than the comparison
4 between the images or portions thereof?

5 A So if you look at claim 7, the section
6 obviously that we emphasized and you pointed to,
7 see it says determining at least partial match
8 between one or more objects detected in the new
9 one or more digital pictures.

10 So you detected the objects in the digital
11 pictures, and you're determining at least a
12 partial match in one or more objects detected in
13 the first one or more digital pictures. So you're
14 essentially looking for that partial match between
15 one or more objects detected in the new one or
16 more digital pictures compared to the first one or
17 more digital pictures, but you're comparing
18 objects between those two digital pictures and
19 you're looking for potentially partial matches.

20 Q And the objects are separate from the
21 digital pictures themselves?

22 A Well, obviously you've -- so you have

1 taken a series of digital pictures in the '583
2 patent. You then have to find the objects, detect
3 the objects. Those objects, as you see in one of
4 the figures, I think it's Figure 17A or Figure 16,
5 you have these graphical representation of the
6 objects. So that, you're now comparing these --
7 you're looking for a partial match between the one
8 or more objects that you've detected in the new
9 picture and the one or more objects detected in
10 the first one or more digital images. So you're
11 comparing the objects for partial match.

12 Q How would you do that comparison to
13 determine a partial match between objects?

14 A So you have a graphical representation of
15 the object as you see in Figure 16A. I think it's
16 Figure 16A. And so Figure 16, not 16A, I was
17 mistaken, Figure 16 and Figure 17A, well, mainly
18 Figure 16, you see in the patent you have a
19 graphical representation of the object. That
20 graphical representation of the object has a
21 certain meaning in the '583 patent.

22 Then when you're matching that to the

1 other object from the other series of images,
2 you're matching these graphical representations
3 between those two sets of objects for partial
4 matching because an object may be occluded in one
5 image and not completely visible. You know, the
6 front of the car occluded and you can only see --
7 you may not be able to see the front tire but you
8 see the rest of the car, for instance.

9 Q So if we were to determine at least a
10 partial match between objects represented in the
11 digital pictures themselves, then we would have
12 determined a partial match between the objects,
13 correct?

14 MR. McCOMMAS: Objection. Form.

15 A No, it is not correct. And you have to be
16 very careful about using -- mixing claim language,
17 which is what you're essentially doing. You have
18 to be careful about mixing claim language from the
19 '583 and its context and meaning to what's
20 disclosed as, obviously in this section, we're
21 talking about Grotmol, so what's disclosed in
22 Grotmol and how it is done.

1 And if you look at my paragraphs 75, 76,
2 and 77, they describe why that is not the same
3 process, so that's not disclosed in Grotmol.
4 You're mixing -- I'm sorry to interrupt you.

5 Q No, go ahead. Did you have a further ...

6 A You're mixing apples and oranges with your
7 sentence, with your question.

8 Q Now, I'm just referring to the language of
9 claim 7 itself and what appears to be an
10 interpretation of that language in the last two
11 sentences of paragraph 74.

12 As I understand it, you're saying that
13 claim 7 requires a comparison between objects that
14 have been detected in the digital pictures and
15 that comparison because those are objects that
16 have been detected in the digital pictures, is a
17 comparison between items that is detection of the
18 objects that are separate from the digital
19 pictures themselves.

20 Does that represent a fair
21 characterization, or is there anything you'd like
22 to add to that?

1 A Yeah, so if you look at the sentence you
2 read, and you read correctly, you see once the
3 objects are detected in pictures as claimed in
4 claim 7, they are separate from the pictures
5 themselves because you have this graphical
6 representation of the object. It's not just a
7 bunch of edges and features in the images. It's a
8 graphical representation of the object. And so
9 they are separate from the pictures themselves and
10 are, therefore, different than images or portions
11 thereof in Grotmol.

12 So you have these graphical
13 representations, and those are well suited to do
14 partial matching because sometimes objects are
15 occluded in imagery so they're not always visible
16 a hundred percent.

17 Q So the partial match in claim 7 is between
18 the detected objects and not between the images
19 themselves?

20 A That's -- so if you read the language, it
21 says determining at least partial match between
22 one or more objects detected and one or more

1 object detected. See, it's the doing the partial
2 match between one or more objects detected in the
3 new set of imagery to one or more object detected
4 in the first set of imagery. So you're doing a
5 partial match between these object
6 representations, not in the image themselves as
7 you would see in Grotmol. It's very different
8 concepts.

9 Q All right. Now, going back to the claim
10 language, which again is reproduced at
11 paragraph 73, it says, starting from the
12 beginning: Wherein the determining the first one
13 or more instruction sets for operating the first
14 device based on the at least partial match between
15 the new one or more digital pictures and the first
16 one or more digital pictures includes, and then we
17 have the last determining.

18 A Exactly.

19 Q So if you're saying that the last
20 determining involves a comparison between objects
21 that are separate from the digital pictures, how
22 is that included within the determination based on

1 a partial match between the digital pictures as
2 recited in claim 7?

3 A Well, it says wherein the determining at
4 the beginning of that claim, includes the
5 determining and the emphasized portion. So you've
6 got a series of digital pictures. So a POSITA
7 reading this claim would understand you have a
8 series of digital pictures, a new series and a
9 first series. You've detected the object in the
10 new series. You've detected the object in the
11 first series. You have an object representation
12 in the new series. You have an object
13 representation in the first series, and you're
14 doing a partial match between those object
15 representations.

16 Q Is it fair to say -- I'm sorry. Go ahead.

17 A Please go ahead.

18 Q Okay. Yeah. Is it fair to say, then,
19 that this language in claim 7, at least partial
20 match between the new one or more digital pictures
21 and the first one or more digital pictures, can
22 include determining an at least partial match

1 between something that is separate from the
2 digital pictures?

3 A I don't understand your question.

4 Q Well, I guess I'm trying to follow the
5 logic that's stated in your declaration. You're
6 saying that claim 7 requires determining an at
7 least partial match between objects that are
8 separate from the digital pictures but that is
9 also part of the determining of an at least
10 partial match between the digital pictures. So
11 how do you square those two concepts?

12 A Well, it's clear when you read
13 paragraph 74, you see once the objects are
14 detected in pictures as claimed in claim 7,
15 they're separate from the pictures themselves
16 because you have an object representation as I
17 pointed you to in 16 and, therefore, are different
18 than the images or portions thereof that you see
19 in Grotmol.

20 So you're comparing the object
21 representations, these graphical representations,
22 and that's distinctively different than what

1 Grotmol does in his work or in his patent.

2 Q You used the term "object
3 representations." What is an object
4 representation?

5 A Well, I meant the graphical representation
6 I showed you in Figure 16. So you have these
7 objects essentially -- if you look at Figure 16,
8 that's what I'm -- that's what I am implying by me
9 saying that.

10 Q Are you referring to Figure 16 of the '583
11 patent?

12 A Yes, sir.

13 Q This looks like what I see is described in
14 the '583 patent as various artificial intelligence
15 methods, systems, and/or models that can be
16 utilized in VSADO unit 100.

17 Is that what you intended to refer to?

18 A Well, if you look at my declaration on
19 page 21, paragraph 55, we give a summarized -- a
20 quick summary version of it. And that kind of
21 describes Figure 16 that I was referring to.

22 Q I see. What is your understanding of an

1 image feature?

2 A A feature in an image for a corner, an
3 edge.

4 Q Through your experience, have you done any
5 work or research that involves image features?

6 A Extensive.

7 Q And can you describe, in general, what
8 would a person of skill in the art understand an
9 image feature to be?

10 A Well, it depends a little bit on the
11 application that you are doing. For instance, if
12 you're doing segmentation, features could be
13 colors of pixels. Could be corners of edges.
14 Could be vertical edges, horizontal edges.
15 Features could be -- you know, people refer to
16 them differently, slightly differently depending
17 on the context of the application. But it's
18 something that distinguishes whatever you're
19 trying to do in the image.

20 Q Let's maybe take the example of a corner.
21 What is the feature -- when you're extracting a
22 feature from an image that corresponds to a

1 corner, how would you express that feature?

2 MR. McCOMMAS: Objection. Form.

3 A Well, your question is a little bit vague.

4 But if I'm looking for a corner in an image, a

5 corner is essentially a location or a group of

6 pixels in the image that represent vertical and

7 horizontal edges because that's what makes it a

8 corner or somewhat vertical and horizontal edges

9 because they don't want it to be exactly vertical

10 or horizontal.

11 So if you're looking for corners, you

12 would do a corner detection using, you know, some

13 type of a convolution or a cross-correlation, and

14 you would find that corner or a series of corners

15 and images that exhibit that change essentially in

16 the vertical direction, which is an edge, a change

17 in the horizontal direction.

18 Q And is the feature itself just the pixels

19 that correspond to the corner, or could the

20 feature characterize the corner in other ways?

21 MR. McCOMMAS: Objection. Form.

22 A Well, the feature would be essentially the

1 set of pixels that represent the corner so the
2 X and Y location. If you're doing corner
3 detection, an X and Y location of those pixels
4 that represent the corner would be part of your
5 feature. You would say, okay, at this location, I
6 have a corner. If the feature is color, then the
7 RGB value of the pixel would be the feature.

8 Q So for -- I just want to make sure I
9 understand. So perhaps for every -- for every
10 location in the image, you would have, I guess,
11 your corner feature would indicate whether -- it
12 could be a binary value that indicates whether
13 there's a corner there or not?

14 A Yes. You would have essentially like a
15 mask or an array that's the same size as the
16 image. And in that array, you would indicate
17 these ten pixels, I'm making the number up, are
18 the corner. If you're looking for, you know, skin
19 color pixels in an image, you would be looking for
20 RGB values that have matching to skin, similarity
21 to skin, and you mark those with a number 1, let's
22 say, where the rest of them might be marked with

1 the number zero. This is just an illustrative
2 example is what I'm giving.

3 Q There are different algorithms to
4 determine different types of features?

5 A Yes. There typically is different
6 algorithms.

7 Q Why don't we turn to Grotmol at column 28,
8 line 19. Let me know when you have that in front
9 of you.

10 A I do.

11 Q Okay. And so I'll just read the sentence
12 that starts at line 19. As used herein the term
13 "feature" may be used to describe one or more
14 integer or floating point values characterizing
15 the input, e.g., the presence or absence of an
16 edge, corner, shape, texture, color, object at
17 particular locations in the image. Values of
18 pixels in an image, patches of color, texture,
19 brightness in the image, and/or image as a whole,
20 properties that are mentioned, features, and it
21 goes on from there.

22 A You read that correctly.

1 Q As we were just discussing with the
2 example of an edge, an edge is an example of a
3 feature that could be detected from an image,
4 correct?

5 A That is correct.

6 Q Is the corner another example of a feature
7 that can be detected from an image?

8 A Yes.

9 Q Is a shape another example of a feature
10 that can be detected from an image?

11 A Well, as described here in Grotmol, he's
12 referring to the term "feature" to describe
13 obviously edge corner and shape. But typically a
14 shape, we wouldn't technically call it a feature.
15 We would just call it the shape of whatever that
16 you have detected.

17 Q Is a texture another example of a feature
18 that can be detected from an image?

19 A Generally speaking, yes.

20 Q Same with color?

21 A Generally speaking, yes.

22 Q Is an object another example of a feature

1 that can be detected from an image?

2 A Well, this is where you start to get into
3 generalizations that aren't really very accurate,
4 so this is not an accurate statement. So an
5 object is not really a feature. It's just you
6 might have detected an outline of a car and an
7 image, and you would say, okay, here's an outline
8 of a car, I think I had a car here. So you've
9 detected the outline. That's not really -- we
10 wouldn't call that a feature. But he refers to it
11 here that way, but that's not really technically
12 correct.

13 Q So he might not refer to it as a feature,
14 but what he's referring to here is detecting an
15 object in the image?

16 A Well, he's referring to detecting an
17 object. But, you know, the devil is in the
18 details. There are many ways of detecting
19 objects. So the devil is in the details. So he's
20 calling his term "feature" and he's saying, well,
21 that's a corner, edge. It's very -- kind of a
22 general umbrella.

1 So some of these things, you wouldn't call
2 features in the technical community. You would
3 just call it, you know, the shape of the object or
4 the object itself. It's not really -- it's not
5 really a feature in the same sense as an edge and
6 a corner. So it's a very general statement, and
7 it could have been more accurate.

8 Q At line 22, when he refers to -- I'm going
9 to piece together from a couple lines above. But
10 he's referring to features being used to describe
11 one or more integer or floating point values
12 characterizing the input, and then we went through
13 a few of those type of features. And then he says
14 at line 22: At particular locations in the image.

15 Do you see that?

16 A Yes, I see that.

17 Q What's your understanding of how an
18 integer or floating point values would
19 characterize the presence or absence of these
20 different features at particular locations in the
21 image?

22 A It's simple. You have an image, RGB

1 array. An image is an RGB array, two-dimensional
2 array, and you have three color channels. You
3 have the red channel, the green channel, and the
4 blue channel. For the discussion here, let's just
5 assume it's a grayscale to make it easy. So we
6 have a grayscale image, we have a two-dimensional
7 array, and we have gray values for every pixel in
8 that two-dimensional array.

9 Are you with me?

10 Q Yeah.

11 A The integer or floating point would be,
12 for instance, if I want to notate the corner at
13 pixel location horizontally row 45 and column 16,
14 I would go to that location in the array and I
15 would say I'm going to put an integer of 1 for
16 every pixel that it would be detected as a corner,
17 and I'm going to put an integer of zero for every
18 pixel that is not. So the row and column location
19 would denote the location where that pixel in the
20 image is denoted as a corner.

21 The floating point would be, like, for
22 instance, the color. If I'm detecting skin color,

1 right, and, you know, and the RGB value of 123,
2 135, 176, I'm making these numbers up, at location
3 row 16, column 45, you would say, let's say, you
4 know, you would indicate that as skin color.

5 Q And then I guess how would the one or more
6 integer floating point values be used to
7 characterize, as he says on line 25, properties of
8 dimensioned features?

9 A Well, it depends on the feature. So for
10 the corner, it would be here's where it's located.
11 So the location of the corner in the image, so you
12 would indicate that. So when I look at your mask,
13 let's say, or the array where you made those
14 indications, I could see where the corners are
15 relative to the image. So that would be
16 indicating the properties of dimensioned features.

17 Q All right. Let's forward to paragraph 78
18 of your declaration.

19 A Paragraph 78?

20 Q Yes.

21 A Yes, sir.

22 Q Okay. And this paragraph begins your

1 analysis of claim 9, correct?

2 A That is correct.

3 Q And the language of claim 9, at least part
4 of the language of claim 9, is reproduced in
5 paragraph 78. Please feel free to review that for
6 a moment.

7 A Yes, I have reviewed it.

8 Q Thank you. And this claim refers to a
9 first learning process and a second learning
10 process, correct?

11 A Yes, it does.

12 Q What is your understanding of a learning
13 process as that term is used in the '583 patent?

14 A Well, you're learning something in a
15 process. I have a person walking in a crosswalk,
16 and you're learning -- your autonomous device is
17 learning something about this particular event, so
18 you're teaching your autonomous device something
19 about this particular event, you know, come to --
20 slow down, come to stop, don't run over the
21 person.

22 Q Is your understanding of a learning

1 process informed by the specification of the '583
2 patent?

3 A Yes.

4 Q Does the term "learning process," is that
5 a term that a person of skill in the art would be
6 familiar with?

7 A Generally speaking, yes. It's obviously a
8 lot -- a general term, and you'd have to look at
9 the context and the application that is, you know,
10 it's being described in to acquire the details.

11 Q So learning process could take on
12 different meanings in different contexts?

13 A Yeah. Generally speaking, yes. I mean,
14 it could have different meanings. But you're
15 learning something. How it's done, the devil is
16 obviously in the details.

17 Q Sure. Yeah. The next paragraph in your
18 declaration, paragraph 79 --

19 A Yes, sir.

20 Q -- in the first sentence, you write:
21 Grotmol fails to disclose the claimed second
22 learning process, in my opinion.

1 And then the next sentence: Grotmol only
2 discloses one user operating one device and one
3 learning process and, therefore, fails to disclose
4 any second learning process and the claimed at
5 least a portion of the second one or more digital
6 pictures or at least a portion of the second one
7 or more instruction sets for operating the first
8 device is learned in a second learning process
9 that includes operating the first device at least
10 partially by the first user.

11 Did I read that correctly?

12 A You read that directly.

13 Q Would you agree that in claim 9, both the
14 first learning process and the second learning
15 process include, and I quote, operating the first
16 device at least partially by a first user?

17 A Well, you have an "and" there. So you see
18 it says: Wherein at least a partial of the first
19 one or more digital pictures, or at least a
20 portion of the first one or more instruction sets
21 while operating the first device is learned in the
22 first learning process that includes operating the

1 first device at least partially by first user.

2 And then it gets into the next "wherein" for the
3 second user.

4 Q Yes. And that first wherein refers to the
5 first learning process, correct?

6 A Yes.

7 Q And that first learning process, the claim
8 states: A first learning process that includes
9 operating the first device at least partially by a
10 first user, correct?

11 A Yes.

12 Q Okay. And then the second "wherein"
13 refers to the second learning process, correct?

14 A Yes.

15 Q And the second learning process includes
16 operating the first device at least partially by
17 the first user, correct?

18 A Yes, you read that correctly.

19 Q So in claim 9, both the first learning
20 process and the second learning process includes
21 operating the first device at least partially by
22 the first user, correct?

1 A You read that correctly.

2 Q So even if Grotmol discloses one user
3 operating one device, you noted in your
4 declaration, these facts would not show that
5 there's only one learning process for purposes of
6 claim 9, correct?

7 A I didn't understand your question, and you
8 cut out a little bit. Can you come again, please?

9 Q Sure. I guess you've emphasized in your
10 declaration that, in your view, Grotmol discloses
11 just one user operating one device?

12 A In one learning process, yes.

13 Q I'm going to focus on the first two
14 aspects here. One user operating one device.

15 A Correct.

16 Q Did that, in your view, inform your
17 impression that Grotmol discloses only one
18 learning process?

19 MR. McCOMMAS: Objection. Form.

20 A I think you're mixing concepts. You're
21 mixing apples and oranges, and you're missing the
22 point that the claim is drawing -- is getting at.

1 Q Well, why would you emphasize these, bold
2 italics, one user operating one device? What was
3 the significance of that to you? Because the next
4 clause in paragraph 79 states: And, therefore,
5 Grotmol fails to disclose any second learning
6 process.

7 A Yes.

8 Q So what's the connection between one user
9 and one device and your conclusion that Grotmol
10 fails to disclose any second learning process?

11 A So you see when you read claim 9, what
12 that claim is getting at is that mixed knowledge.
13 So it's not that you have one user operating a
14 device by itself. It's not -- you're taking that
15 out of context.

16 Claim 9 is getting at the mixed knowledge
17 part. You have the first user operating the first
18 device in the learning process, and you have the
19 "portion and partially" that you've read
20 correctly. And you've got that same first user
21 operating where a portion and partially, you have
22 a second learning process, and that mixed

1 knowledge between the two is the important part of
2 the claim. That is not in Grotmol.

3 That's why you see Grotmol discloses one
4 user operating one device in one learning process.
5 You don't -- Grotmol does not disclose any mixed
6 knowledge from these learning processes. That's
7 what we're talking about.

8 So if you look at my paragraph 80, on
9 page 35, you see where it says since Grotmol
10 discloses only a single learning process, multiple
11 tasks are learned in single learning process.
12 Nothing in Grotmol suggests that multiple tasks
13 are learned in multiple learning processes as
14 claimed in claim 9. That's essentially what we're
15 trying to get at. It's the mixed knowledge
16 that's -- that mixture of knowledge is not a
17 trivial thing to do.

18 Q So just to be clear, a first learning
19 process and a second learning process can be
20 performed by the same user on one device?

21 A Yeah, as you see in claim 9, you see you
22 have the first user performing a first learning

1 process and the first user performing a second
2 learning process. And it's the mixing of that
3 knowledge that is the important part of the claim
4 and then the correlation obviously with the
5 instruction sets. But the mixing of the knowledge
6 is the important part of that claim.

7 Q What does it mean to mix knowledge?

8 A You see if you look at the claim, let's
9 dissect it starting at the first "wherein," you
10 see where it says: Wherein at least a portion of
11 the first one or more digital pictures. So you
12 have a portion of the digital pictures or at least
13 a portion of the first one or more instruction
14 sets for operating the first device is learned in
15 the first learning process. That includes
16 operating the first device at least partially by
17 the first user.

18 So you have a portion of the first or more
19 instruction sets. Whatever that instruction set
20 is for your autonomous device, person walking in
21 the crosswalk, you've got an instruction set for
22 that particular person, walking in the crosswalk

1 from the imagery. And I'm simplifying here quite
2 a bit. And then you go to the second "wherein,"
3 at least a portion of the second one or more
4 digital pictures, so you have a second one or more
5 digital pictures where at least a portion of the
6 second one or more instruction sets for operating
7 the first device, still that same autonomous car,
8 let's say, is learned in the second learning
9 process.

10 So you have something that's learned in
11 the second learning process, and you mixed -- you
12 integrated those two seamlessly together in a
13 sense.

14 Q And integrating them seamlessly together,
15 that's what you're referring to as mixing?

16 A Yes. So you're bringing that knowledge
17 from the two learning processes together in a
18 seamless manner to obviously have the more, you
19 know, the more -- you know, a better learning
20 process. So you're integrating what you learned
21 from the first learning process and what you learn
22 from the second learning process and correlating,

1 you know, the pictures with the instruction sets.
2 So that mixture of integration of knowledge is not
3 exposed in Grotmol.

4 Q So I do think that's a little different
5 from how I was reading your declaration earlier.
6 It seems in your declaration you were arguing
7 Grotmol fails to disclose a second learning
8 process. Now that, we might disagree with that.
9 But let's just say that's true. I think there's a
10 separate issue which you're arguing now as to
11 whether what's learned is mixed, if there's a
12 mixing of what's learned between the first and
13 second learning process.

14 So I guess is it your contention that
15 Grotmol does not disclose a second learning
16 process? I'll stop there. Is that still your
17 contention?

18 A Well, if you look at my paragraph 80, you
19 see it says -- so the start of the paragraph says
20 petitioner states that Grotmol describes that
21 multiple training processes can be conducted to
22 learn multiple tasks, and you have a citation

1 there. Petitioner is wrong since claim 9
2 specifically recites a knowledge base that
3 includes one correlation learned in one learning
4 process, an additional correlation learned in
5 another learning process.

6 Since Grotmol discloses only a single
7 learning process, multiple tasks are learned in
8 the single learning process. Nothing in Grotmol
9 suggests that multiple tasks are learned in
10 multiple learning processes as claimed in claim 9.
11 So that's my opinion.

12 Q And so your opinion is that Grotmol does
13 not disclose a second learning process, correct?

14 A I think you are misrepresenting my
15 opinion. It says nothing in Grotmol suggests that
16 multiple tasks are learned in multiple learning
17 processes as claimed in claim 9. So it's the
18 multiple tasks, multiple learning processes.

19 Q I don't want to misrepresent your opinion,
20 so thank you.

21 I'll read the first sentence from
22 paragraph 79. Grotmol fails to disclose the

1 claimed second learning process, in my opinion.

2 A That's correct.

3 Q Is it your opinion that Grotmol does not
4 disclose the second learning process?

5 A Well, obviously this is referring to
6 claim -- the context of claim 9. It's not that
7 Grotmol -- it's the context of claim 9 that we're
8 talking about here.

9 Q Well, I'm trying to understand then. But
10 are you saying that Grotmol might disclose a
11 second learning process but it might not be mixed
12 with what's learned from the first learning
13 process?

14 A I don't understand what you're asking.

15 Q Well, you seem to be distancing yourself
16 from the very -- what I think is a clear statement
17 in the first sentence of paragraph 79. You say
18 that Grotmol fails to disclose the claimed second
19 learning process.

20 Do you agree with that statement still?

21 A Yes. In my opinion, and I'm talking
22 obviously that, quote/unquote, second learning

1 process is referring to the context of claim 9.

2 Q Which is a second learning process, as we
3 reviewed before, a second learning process that
4 includes operating the first device at least
5 partially by the first user, correct?

6 A Correct. That whole context is important.
7 It's not just by itself. It's, I mean, the
8 quote/unquote here is just referring to claim 9.
9 You could probably quote/unquote the whole thing.
10 The point is it's referring to that whole thing.
11 It's not just a second learning process. It's a
12 second learning process that includes operating
13 the first device at least partially by the first
14 user and then bringing those two things together.
15 That's what we're talking about here in claim 9,
16 and that is what is not disclosed in Grotmol.

17 Q Okay. I think I understand. Thank you
18 for the clarification.

19 So I would like to understand better what
20 types of things you assessed in Grotmol to arrive
21 at your conclusion that Grotmol fails to disclose
22 the claimed second learning process.

1 MR. McCOMMAS: Objection. Form.

2 A I mean, you're asking a very general
3 question. Is there something specific in Grotmol
4 that you're referring to? I mean ...

5 Q Well, you provided zero citations to
6 Grotmol in your opinion here. But I think that
7 you review Grotmol to arrive at your conclusion.
8 So what did you look at in Grotmol that led you to
9 the conclusion that Grotmol fails to disclose the
10 second claimed learning process?

11 A I mean, I studied obviously what Grotmol
12 discloses. I studied the patent in detail. I
13 studied the techniques that are disclosed in
14 Grotmol.

15 Q Can you point me to some examples?

16 A If you look, for instance, at column 8,
17 starting at, you know, lines 57 where it's
18 disclosing -- discussing Figure 1 of Grotmol, so
19 obviously he's discussing the figure so what is --
20 what's this figure disclosing? And he says:
21 e.g., a learning apparatus. So you look at the
22 learning apparatus, the sensor, the figure itself

1 and what's being disclosed.

2 If you look at column 10, Grotmol
3 disclosed on line 21, Grotmol disclosing the
4 sensor output may be processed by a learning
5 controller. You read through the description of
6 Grotmol, you come to that conclusion. So, I mean,
7 you would have to read the whole thing. There's
8 no discussion of mixed learning in Grotmol.
9 There's no discussion of mixing learning processes
10 as disclosed in the claim 9.

11 Q What types of -- strike that.

12 Claim 9, as we've just discussed, refers
13 to a first learning process and a second learning
14 process, correct?

15 A That is correct.

16 Q So what types of things would you look for
17 to delineate between a first learning process and
18 a second learning process?

19 MR. McCOMMAS: Objection. Form.

20 A Well, again, if you look at the claim,
21 it's not just the first and second learning
22 process. It's the portion, partially the

1 integration. So it's not just Tom operates the
2 robot in Grotmol, then John operates the robot in
3 Grotmol or Tom operates the robot in Grotmol, then
4 2 days later Tom operates the robot in Grotmol.
5 That's not a second learning process as claimed
6 here. It's the integration of the learning
7 between the two. How do you seamlessly integrate
8 the learning, the instruction set, the digital
9 pictures. That's the context of claim 9, and
10 that's -- there's no discussion of any kind in
11 Grotmol.

12 Q My question was focused specifically on a
13 first learning process and a second learning
14 process.

15 A Yes.

16 Q So let's take a first learning process
17 that includes operating the first device at least
18 partially by a first user and a second learning
19 process that includes operating the first device
20 at least partially by the first user.

21 A Go ahead.

22 Q So two learning processes recited in claim

1 9, as we've just discussed, that involve operating
2 the same device, the first device, by the same
3 user, the first user, how do you know when the
4 first learning process ends and the second
5 learning process begins?

6 A That's essentially the innovation that's
7 in claim 9. So you see you have a learning
8 process. It's not like one ends and one begins.
9 It's the integration of the two. So I have a
10 learning process where a person is walking through
11 the crosswalk and I taught my autonomous device to
12 do something and I have a learning process where
13 somebody is wheeled, you know, riding a bicycle
14 through a crosswalk, and I learn something from
15 that. And integration, integrating the two
16 processes, integrating the knowledge from the two
17 processes is the --

18 Q That wasn't my question, Dr. Saber. Thank
19 you.

20 I asked specifically not about
21 integration, about the first and second learning
22 processes. You understand how claim

1 interpretation works, correct, in reviewing patent
2 claims?

3 A I'm not an attorney. I'm reviewing it,
4 I'm looking at the patent claims from the eyes of
5 a POSITA. Obviously I'm not an attorney.

6 Q I understand. I'm referring to the first
7 learning process and the second learning process.
8 How do you distinguish between the two, or are you
9 not able to tell me today?

10 A Well, it's not just a piecemeal. It's the
11 claim 9, you're reading claim 9 as a whole. So
12 you have a first learning process where you have,
13 like as I explained to you, you have somebody
14 walking in the crosswalk where you've taught your
15 autonomous device to do something. You have a
16 first learning process that's taken place. And
17 then you have a second learning process that's
18 taken place.

19 Q Can I just pause you right there? You
20 said there's a first learning process that's taken
21 process and a second learning process that's taken
22 place. How does one know that those learning

1 processes are separate?

2 A Well, they're not done at the exact same
3 second. I mean, you have a first learning
4 process.

5 Q I'm sorry. Go ahead.

6 A You have a first learning process that's
7 taken place, and all the portion and partial we're
8 talking about. You have the second learning
9 process that's taken place. They didn't happen at
10 the same instance at the same time.

11 Q So a temporal separation might be one
12 thing that you would look for to determine that
13 the second learning process is separate from the
14 first learning process?

15 A Yeah, I mean, generally speaking because
16 you have the same user and you have obviously the
17 same device here. You have the same user, you
18 have the same device. There's a first learning
19 process that's taken place and at seconds later or
20 minutes or whatever, there's a second learning
21 process that's taken place.

22 Q So the first and second learning processes

1 would not take place at the same time?

2 A Well, I mean, you have the first user
3 operating the first device, and you have the first
4 user operating the first device so obviously the
5 first user couldn't operate the first device at
6 the same exact second both times, so they have to
7 be done at separate times. It's the same --

8 Q Yeah --

9 A Same user, different learning processes.
10 So you would come to the -- the POSITA would come
11 to the conclusion that they're not done at the
12 exact same time.

13 Q And if that first user operating the first
14 device were training at different times, the robot
15 to perform different tasks, would those be
16 separate learning processes?

17 A I think you're mixing -- you're taking
18 claim language out of context, and you're
19 essentially misrepresenting the context. It's not
20 that a first user -- I'm the user of Grotmol. I
21 ran my robot. I learned something. A day later I
22 came in, I ran my robot, I learned something. Of

1 course those didn't happen at the same time and
2 I'm the same user and same robot.

3 That's not what's being discussed here in
4 claim 9. It's not that you learn something and a
5 day later you learn something. It's the portions,
6 the partials, that mixed knowledge between the
7 something and something that we are -- that the
8 context of claim 9 isn't just you have two
9 processes. It's the integration of that knowledge
10 is what's the important part here.

11 Q Well, claim 9 includes a number of
12 limitations, and I'm really just focused on one
13 aspect of claim 9, the first learning process and
14 the second learning process. So granted, there
15 are -- there's -- claim 9 does recite two
16 correlations as you've discussed. What I'm trying
17 to understand is a distinction that you see
18 between the first learning process and the second
19 learning process.

20 How does a person of ordinary skill in the
21 art know when you have a first user that's
22 operating a first device, when does that first

1 user transition from the first learning process to
2 the second learning process?

3 A Well, it's not -- it didn't happen at the
4 same time, right. So you had a first learning
5 process, I'm operating the autonomous device of
6 '583. So if you see, if you look there wherein at
7 least a portion of the one or more digital
8 pictures, acquiring digital pictures, the portion
9 of the first one or more digital pictures or at
10 least a portion of the first one or more
11 instruction sets for operating the first device is
12 learned in the first learning process that
13 includes operating the first device at least
14 partially by first user. So there are more than
15 just -- it's not just a learning process. You
16 have the portions. You have the partial, so ...
17 and that's all happened at some same time instant.
18 Then some time later, the first user operating
19 that first device is doing the second learning.

20 Q Okay. So the first and second learning
21 processes take place at different times, at least
22 in the context of claim 9?

1 A Well, they can't be at the exact same time
2 because first user is the first device. So we're
3 looking at the same device, first device, first
4 device, first user, first user. So a POSITA would
5 come to the conclusion reading claim 9 that
6 they're not -- the learning of the first and
7 second isn't happening at the exact time instant.
8 It's happening at separate time instances.

9 Q Are there any other factors that you would
10 consider in resolving whether that first user
11 operating the first device is engaged in the first
12 versus the second learning process?

13 MR. McCOMMAS: Objection. Form.

14 A I don't understand your question.

15 Q Aside from temporal separation, we've
16 established that because you have the same first
17 user operating the first device in both learning
18 processes, naturally the first and second learning
19 processes would not occur at the same time in
20 claim 9?

21 A Right.

22 Q Are there other things that must be

1 considered to assess whether the first user is
2 engaged in the first learning process versus the
3 second learning process, aside from the temporal
4 separation?

5 MR. McCOMMAS: Same objection.

6 A Well, obviously you have a different set
7 of imagery as well. You're not using the exact
8 same set of imagery, right. So you have a portion
9 of the first one or more digital pictures and
10 portion of the first one or more instruction sets
11 is learned in this.

12 And then you see in the second one, it
13 says at least a portion of the second one or more
14 digital pictures and at least a portion of second
15 one or more instruction sets so it's learned in
16 the second learning process. You also have
17 different pictures are being presented to acquire
18 the learning, so it's not just the temporal. It's
19 also different sets of pictures that are resulting
20 in different instructions.

21 Q Understood.

22 All right. We've been going for about an

1 hour and 20 minutes. Would this be a good time
2 for a break?

3 A Yeah, I think that would be fantastic.

4 (A short break was taken.)

5 Q Dr. Saber, I'd like to -- well, first, did
6 you have any discussions with counsel during the
7 break?

8 A No, I have not.

9 Q I'd like to refer to Grotmol,
10 Exhibit 1005.

11 A Yes, sir.

12 Q And specifically Figure 4A.

13 A Yes, sir.

14 Q Can you describe what is shown in
15 Figure 4A of Grotmol?

16 A Well, if you look at column 5, starting at
17 line 33, it obviously gives the figure a title.
18 It says Figure 4A is a block diagram illustrating
19 an adaptive control system for use with, e.g., the
20 robotic apparatus of Figure 1 according to one or
21 more implementations.

22 Q And do you have an understanding of the

1 operation of Figure 4A?

2 A Yes, it's described in Grotmol.

3 Q Can you describe that for me, please?

4 A If you look at column 15, starting at
5 line 19, Grotmol states Figure 4A illustrates an
6 implementation of adaptive control system 400. So
7 you see if you look at the figure, he's got the
8 number 400 at the top left of the figure.

9 And then Grotmol goes on to say: The
10 adaptive control system 400 in Figure 4A may
11 comprise a corrector 4A that you see at the top of
12 the figure, and a combiner 414 cooperating to
13 control the robotic platform 430. So you see the
14 combiner 414 and then the robotic platform 430 at
15 the bottom right of the figure.

16 And then Grotmol states: The learning
17 process of the adaptive predictor 422, which is
18 shown on the left side of the figure, may comprise
19 a supervised learning process, a reinforcement
20 learning process, and/or a combination thereof.

21 Q And what is the function of the corrector
22 412?

1 A So you see if you continue on, so the next
2 sentence, you see it says: The corrector 412, the
3 predictor 422, and the combiner 414 may cooperate
4 to produce a control signal 420 that you see
5 marked on the figure for the robotic platform 410,
6 which is an error. It probably should say 430
7 there.

8 Q So the combiner 414 receives as inputs a
9 signal 418 from the adaptive predictor 422 and a
10 signal 408 from the corrector 412 to produce the
11 control signal 420; is that correct?

12 A That's correct.

13 Q And that control signal 420 is a corrected
14 version of the signal 418 from the adaptive
15 predictor 422?

16 A Well, it's combined obviously with the
17 output of the corrector. So the output of the
18 corrector and the output of the predictor, 408 and
19 418 respectively, are combined in the combiner to
20 produce a control signal 420 that Grotmol is
21 referring to in the figure.

22 Q Does the combiner 414 modify the signal

1 418 from the adaptive predictor 422 based on the
2 correction signal 408?

3 A So you see on column 15, line 29, you see
4 it says: In one or more implementations, the
5 control signal 420 that comes out of the combiner
6 may comprise one or more motor commands, pan
7 camera to the right and turn right wheel forward,
8 et cetera, sensor acquisition commands and/or
9 other commands.

10 Q So are the motor commands and the control
11 signal 420 modified commands from the signal 418?

12 A Obviously you're going to receive some
13 signal from 418 and 408. The combiner is going to
14 combine them in some appropriate fashion to
15 produce the signal 420.

16 Q So the combiner 414 is modifying the
17 control signal 418 based on the corrected signal
18 408?

19 A So if you look at column 17, you see
20 starting on line 8, it starts to discuss the
21 combiner stuff. If you look at line 35, you see
22 it says: The combiner 414 may implement a

1 transfer function H of X where H includes the
2 control signal 408 and the control signal 418. So
3 the combiner would take those two signals, will
4 implement the transfer function, and obviously
5 pass that onto the decoder.

6 Q And the transfer function, Grotmol states
7 at line 46, may comprise one or more of addition,
8 multiplication, union, illogical "and" operation,
9 illogical "or" operation, and/or other operations,
10 correct?

11 A Yes.

12 Q Any of these transfer functions, would
13 they serve to modify the control signal 418?

14 MR. McCOMMAS: Objection. Form.

15 A I didn't hear your question.

16 Q Yeah, I can repeat it.

17 A Please.

18 Q Do any of the transfer functions that
19 Grotmol lists here modify the motor commands in
20 signal 418?

21 MR. McCOMMAS: Objection. Form.

22 A Well, there isn't any of the transfer

1 functions. There is -- that transfer function may
2 comprise one or more of, so obviously the
3 addition, multiplication, union, logical "and,"
4 and a logical "or" would modify -- would take X as
5 described by Grotmol and which X comprise, you
6 know, 408 and 418 and would produce H of X, which
7 would, you know, be a modification because
8 otherwise it would just say it will pass it along
9 and you don't need a combiner.

10 Q All right. Let's turn to your analysis of
11 claim 29 in your declaration, which starts at
12 paragraph 114.

13 A Yes.

14 Q Would you like to take a moment to review
15 the language of claim 29?

16 A Yes.

17 Q Is it your understanding that claim 29
18 requires three steps for generating the new one or
19 more digital pictures?

20 A So if you go to paragraph 118, which is
21 obviously talking about claim 29 --

22 Q 118, I'm sorry?

1 A 118, paragraph 118 on page 53. So if
2 you'll look there, you'll see -- I state:
3 Claim 29 provides a specific method for generating
4 a new digital picture that is different than
5 simply capturing images, open paren, that happen
6 to have some objects depicted therein, close
7 parentheses, by camera, in my opinion. And you
8 see in the paragraph, there is a "first," three
9 lines later there's a "next," and two lines later,
10 there's "finally." So there's a three-step
11 process that I think you're referring to that's
12 described there.

13 Q So first an object is depicted in the
14 first device's or the second device's surroundings
15 through processing of information from one or more
16 sensors, including some embodiments from images of
17 a camera?

18 A You read that correctly.

19 Q And then next is, you've written: Also
20 through processing, a representation of a detector
21 object is generated that's separate from the
22 sensor information, i.e., original image, et

1 cetera, in which the object is detected, correct?

2 A Yes.

3 Q And then you write: Finally also through
4 processing the new digital picture, generated to
5 include the representations of the detected
6 objects, correct?

7 A That is correct.

8 Q So you read -- I guess is it fair to say
9 that the detection step in claim 29 in your view
10 must occur before generating one or more
11 representations of the one or more objects, which,
12 in turn, must occur before generating the new one
13 or more digital pictures that include the one or
14 more representations of the one or more objects;
15 is that correct?

16 A Well, I'm not a patent attorney obviously.
17 But as a POSITA reading claim 29, you have
18 basically three steps that I described. First, an
19 object is detected. So that's the detecting one
20 or more objects surrounding or second devices
21 surrounding. Then you have the next step, which
22 is next also through processing, a representation

1 of the detected object is generated, et cetera, as
2 you read. So that's generating the one or more
3 representations. And then, finally, in the last
4 step, the new digital picture is generated. And
5 that's essentially the generating the new one or
6 more digital pictures that include the one or more
7 representations of the one or more objects.

8 So you have a three-step process that's
9 occurring in that, you know, in that sentence, I
10 guess.

11 Q Is your understanding of claim 9 informed
12 by your review of the specification of the '583
13 patent?

14 A Did you say claim 9 or claim 29?

15 Q I might have said 9, but I intended claim
16 29, if I did. Let me repeat that again.

17 A I listen very carefully, sir. Every word
18 is very important.

19 Q It is. Thank you.

20 Did you -- is your understanding of
21 claim 29 informed by the specification of the '583
22 patent?

1 A Well, my understanding of the claim would
2 be informed by other claims that it depends from
3 and obviously the specification of the '583. So
4 claim 29 depends from claim 4. And obviously
5 claim 4 depends from claim 1, so there is a
6 dependency there. So you would have to read all
7 of that. And then you read that in light of the
8 specification.

9 Q Is there a portion of the specification of
10 the '583 patent of which you were aware that
11 describes this process, those three steps recited
12 in claim 29?

13 A I don't recall exactly. I mean, the
14 patent is pretty large, obviously. I don't recall
15 exactly the exact location of it. I can -- you
16 know, I can sit and read through the whole patent
17 and find it for you. But when you read the patent
18 and you read the claim, you would come -- as a
19 POSITA would come to that understanding.

20 Q You know, I think that actually would be
21 helpful. If you are -- let's take some time. If
22 you would review the spec and let me know if you

1 see any disclosure of those processes.

2 (Witness peruses document.)

3 A So I'm not able to find exactly because
4 it's a large patent and it will take me several
5 hours to read through it. When you read through
6 the patent context, obviously you would come to
7 that -- you would come to that understanding. But
8 I would have to take several hours to read through
9 where this understanding is disclosed because it's
10 a very large patent and it's hard to find exact
11 disclosures in it.

12 Q So you were unable to -- it's been about
13 8 minutes since I asked my question. In that
14 time, and I recognize that the specification is
15 quite long, but you were unable to identify
16 disclosure in the specification that would support
17 these claim features?

18 A It's quite a large patent, so it's not
19 trivial to locate things in the patent easily
20 obviously because of the length of the patent and
21 so I would have to, you know, read through it
22 carefully to find the disclosures that have led to

1 that. It would take me several hours to do that.

2 Q In paragraph 118, you noted earlier, the
3 first sentence, you write: Claim 29 provides a
4 specific method for generating a new digital
5 picture that's different than simply capturing
6 images that happen to have some objects depicted
7 therein by a camera, in my opinion. Correct?

8 A Yes.

9 Q Based on your review of the specification
10 of the '583 patent, were there any particular
11 advantages or benefits described with respect to
12 this new method recited in claim 29?

13 MR. McCOMMAS: Objection. Form.

14 A I'm sorry. I think I heard the second
15 part of your question.

16 Q Do you recall any advantages or benefits
17 discussed in the '583 patent with respect to
18 the -- what you characterized as a specific method
19 in claim 29?

20 MR. McCOMMAS: Objection. Form.

21 A So obviously, I mean, in claim 29, you can
22 see that you have essentially these three steps

1 described. You have detecting one or more
2 objects, generating one or more representations of
3 the one more objects. So you're detecting the
4 objects, you're generating the representations.
5 And generating new one or more digital pictures
6 that include the one or more representation. So
7 essentially it's like a process of segmentation.
8 So you're generating a new one or more digital
9 pictures that includes the one or more
10 representations of the one or more objects, so ...

11 Q Can you elaborate on that? How would this
12 relate to segmentation?

13 A Well, I mean, you're -- if you look at the
14 first step, an object is detected in the first
15 device or second device surrounding through
16 processing of information from one or more
17 sensors, say, images from the camera. So you're
18 detecting the object.

19 Next, also through processing, a
20 representation of detected object is generated.
21 So now you've generated the representation of the
22 object based on the discussions that we were

1 discussing before about the representation of the
2 objects. And now that you have this
3 representation, you have this graphical
4 representation of the object and its components,
5 so to speak, the new digital picture is generated
6 to include the representation of the detected
7 object. So now those detected objects and
8 portions thereof, the graphical representation, is
9 essentially superimposed or highlighted in those
10 digital pictures that you've generated.

11 Q Yeah. And in this example, how are the
12 objects detected?

13 A Well, you performed the object detection.
14 You know, '583 would perform object detection.

15 Q And object detection, you could use, for
16 example, an object detection algorithm to detect
17 objects in the digital images?

18 A Yeah. I mean, you would perform object
19 detection to detect the object.

20 Q So the objects could be detected in claim
21 29 from the new one or more digital pictures?

22 A Well, you're detecting the one or more

1 objects. So it says: Wherein generating the new
2 one or more digital pictures includes. So you're
3 generating the new one or more digital pictures
4 that includes this three-step process we've been
5 talking about. You detect the objects. You
6 generate the representations. And then you
7 generate the new one or more digital pictures that
8 includes those representations.

9 Q Can you give me a concrete example of how
10 you would generate the new one or more digital
11 pictures by detecting one or more objects in the
12 first devices surrounding or the second devices
13 surrounding?

14 A Well, I mean, I'll give you an example.
15 Like so when you detect -- in the first step,
16 you're detecting the object. So you've detected
17 the object. Maybe that's a car. The car has
18 white windows and black tires and red body. So
19 you have the car itself as an object, and you have
20 these sub pieces of the objects. You have an
21 object representation that represents the object
22 and its components. So that's the next step.

1 So the first step, you've detected the
2 object by processing information. You've done
3 object detection. You found the object. Then you
4 created a representation of the object, so now you
5 have the object and its components in a sense.
6 Now, the new digital picture is generated to
7 include the representations of the detected
8 object. So now in the new digital pictures,
9 you're going to demarcate or highlight or show
10 where the objects are in this temporal series of
11 digital pictures in these imagery.

12 Q And the one or more objects, they can be
13 detected from the new one or more digital pictures
14 themselves, correct?

15 A I don't understand your question.

16 Q In the first step, you've laid out each of
17 the steps in claim 29. I appreciate that.

18 A Yeah.

19 Q In your discussion of detection, you said
20 you detect these one or more objects. And I'm
21 curious, what is your view, how are these -- what
22 are you detecting the objects from?

1 A So in the first step an object is
2 detecting through processing of information -- so
3 you have a series of images. I have a video of a
4 person walking in a crosswalk. So I detect the
5 person. You say that's my object. So in these
6 digital images, you have the person. They've got
7 hands and feet and body and head, so you've
8 detected that object.

9 So in each of these images, you have
10 essentially the comprehension of the object and
11 its components. So that's the detection part. So
12 you know where the object is. You know temporally
13 how it's moving through the images. So that's
14 Step 1 is you're detecting the object.

15 Step 2 is you're creating a representation
16 of it, so now you have this Figure 16
17 representation of the object. So in each of these
18 frames -- and you have that temporal connection in
19 a sense.

20 Q And are the Figure 16 representations of
21 the objects then included in the new one or more
22 digital pictures?

1 A So now, yes, now that you're creating --
2 you know, you're generating a new one or more
3 digital pictures that include the one or more
4 representation. So the new digital pictures
5 you're going to create, you're going to include
6 this representation of the object, the
7 inner-connectivity spatially, temporally of that
8 object.

9 Q Could we turn to column 3 of the '583
10 patent?

11 A Column 3?

12 Q That's correct. And specifically the
13 paragraph that begins at line 23.

14 A Line 3, column -- sorry, column 3,
15 line 23, the paragraph that begins at line 23?

16 Q That's correct.

17 A Yes, sir.

18 Q So this first sentence in the paragraph
19 reads: In some embodiments, the first digital
20 picture includes a stream of digital pictures.

21 Do you see that?

22 A Yes.

1 Q And then the next sentence: In further
2 embodiments, the new digital picture includes a
3 stream of digital pictures. Correct?

4 A Yes.

5 Q Do you have an understanding of a stream
6 of digital pictures in the '583 patent?

7 A Yes.

8 Q What is a stream of digital pictures?

9 A More than one. Like a video. Capturing,
10 you know, a stream of digital pictures. You
11 understand the video typically is captured at
12 30 frames a second typically, so your video camera
13 on your phone or whatever camera you're holding is
14 capturing images, frames at 30 frames a second,
15 and each frame has RGB channels. So each frame
16 has three channels, and you have 30 of those in a
17 second, so that would define a stream of digital
18 pictures.

19 Q So the first digital picture can include
20 multiple digital pictures; is that correct?

21 A Yes. So you see the first sentence that
22 you read there, sir, is the first digital picture

1 includes a stream of digital pictures. So your
2 digital picture could be 150 frames and the next
3 one could be 270 frames.

4 Q And thank you. Going a little farther
5 down in the paragraph, it says: In further
6 embodiments, this is line 29, the first or the new
7 digital picture includes a JPEG picture, a GIF
8 picture, a TIF picture, a PNG picture, a PDF
9 picture, or a digitally encoded picture.

10 Do you see that?

11 A You read it correctly.

12 Q Are you familiar with a JPEG picture?

13 A Yes.

14 Q What do you know of that picture?

15 A JPEG is an algorithm that was -- or a
16 standard that was developed by the Joint Picture
17 Expert Group [sic]. And it's essentially a
18 compression standard for a given image, so you
19 provide an image. It's going to perform
20 compression. So essentially it's going to divide
21 the image into blocks of 8-by-8, do a DCT, a
22 discrete cosign transformation, zigzag --

1 zigzag basically. I don't want to say coding, but
2 perform a zigzag essentially going through the
3 DCT, and then do a run-length encoding and then
4 variable-length coding to use the Hoffman codes.
5 We teach that in the digital image processing
6 class on a regular basis. I think I even have
7 implementations of JPEGs somewhere in my
8 libraries.

9 Q And the purpose of using a JPEG format is
10 to compress the file size of a digital picture?

11 A Yes. So obviously a digital picture may
12 be, I don't know, I'm making this up, one megabyte
13 worth of bits, and then you want to make it a
14 little smaller.

15 Q And what information, again, would be
16 provided in a JPEG picture?

17 A What do you mean, what information? I
18 mean, a JPEG is a compressed version of the
19 original picture. Whatever is in the original
20 picture is still there except it's compressed and
21 you have a lossless and lossy version. So if you
22 don't apply quantization, you have a lossless

1 compression.

2 It takes advantage of the spacial,
3 basically, redundancy in the image. You know my
4 face or my head isn't a random selection of
5 pixels. There's actually continuity of skin
6 across my face. So the redundancy in the spacial
7 domain, JPEG would take advantage of using the
8 discrete cosign transform.

9 So that redundancy is what you go after to
10 try to compress the images. Instead of having
11 100-by-100 image, you have 10,000 pixels, let's
12 say 8 bits per pixel, right, you would compress it
13 to something smaller. So it's a compression
14 mechanism.

15 Q Compression mechanism?

16 A Compression standard. But the content of
17 the image is still essentially -- if it is
18 lossless, it would be unchanged. If it is lossy,
19 you would have some minor changes. It's obviously
20 not going to be perfect.

21 Q How about a GIF picture?

22 A Similar. It's another format of

1 essentially storing information.

2 Q Similar for TIF and PNG?

3 A Yeah, PNG would be native, like you store
4 it in its native raw format typically.

5 Q Do JPEG pictures include any metadata
6 apart from the information that describes the
7 pixels in the image?

8 MR. McCOMMAS: Object to scope.

9 A Well, the JPEG picture itself doesn't
10 include the metadata. You would have to create
11 something -- you know, the application would have
12 to capture the metadata as well. But the JPEG
13 itself, I mean, obviously you have a timestamp and
14 a date and that type of thing for the image. But
15 beyond that, I mean, you would have to do some
16 capturing.

17 Q All right. Could we take 5 minutes? And
18 then come back for one last session before lunch?
19 Or are you getting -- would now be a good time to
20 break for lunch for you?

21 A If your session is short after lunch, I
22 think we'll be fine.

1 Q So do 5 minutes now and then take lunch?
2 5 minutes now, come back for 30 minutes and we'll
3 take lunch?

4 A That sounds reasonable.

5 MR. STEPHENS: Okay. Let's do 5 minutes,
6 and we'll be back on the record soon.

7 THE WITNESS: I'll be at my desk at 12:30
8 Eastern.

9 (A short break was taken.)

10 MR. STEPHENS: Back on the record.

11 Q During the break, Dr. Saber, did you
12 communicate with counsel?

13 A No, I did not.

14 Q I'd like to turn to paragraph 119 in your
15 declaration.

16 A Yes, sir.

17 Q And this begins your discussion of claim
18 31, correct?

19 A That is correct.

20 Q The language that you quoted from claim 31
21 reads: Wherein the generating the proposed one or
22 more instruction sets for operating the first

1 device includes generating the first one or more
2 instruction sets for operating the first device as
3 one or more representations of a second one or
4 more instruction sets for operating the first
5 device. Correct?

6 A That is correct. And I think that's all
7 the language with the exception of claim 4.

8 Q Yes. Thank you.

9 What is your understanding of the term
10 "representation"?

11 A So it means representation. It represents
12 just like an object representation, represents,
13 you know, portions, represents the object or
14 components of the object.

15 Q And paragraph 120 --

16 A Yes, sir.

17 Q And I'm referring to the second-to-last
18 sentence. You state: For example, an instruction
19 set that represents another instruction set in
20 claim 31, includes a more generalized instruction
21 set that can be used more flexibly on more
22 different types of device in my opinion. Correct?

1 A You read that correctly.

2 Q And is this an example from the
3 specification of the '583 patent?

4 A I don't remember off the top of my head.

5 Q You did not provide a citation to the '583
6 patent in referencing this example, correct?

7 A That's correct. There's no citation
8 there.

9 Q Just to be clear, this is an example of a
10 representation of an instruction set that you
11 provide here in paragraph 20, but claim 31 would
12 not be limited to this embodiment?

13 A Well, I mean, I state there: For example,
14 an instruction set that represents another
15 instruction set in claim 31, includes a more
16 generalized instruction set that can be used more
17 flexibly on multiple different types of devices.

18 Q Can you think of other examples that would
19 be consistent with the features recited in claim
20 31?

21 THE COURT REPORTER: I'm sorry, that faded
22 out at the end. Consistent with what?

1 MR. STEPHENS: Yes, I'll repeat the
2 question.

3 Q Dr. Saber, can you think of other examples
4 that would be consistent with the features recited
5 in claim 31?

6 A Well, the example I gave you there I think
7 is a very good example.

8 Q Dr. Saber, I don't see you. There you go.

9 A I'm here. Sorry, I'm looking at the
10 pages.

11 Q Can you think of any other examples?

12 A Sitting here today, off the top of my
13 head, I think the example that you have there
14 represents it fairly well.

15 Q I'm asking if you could -- if you are able
16 to think of any other examples today.

17 A Right now I'm not thinking of any -- I
18 would have to step back and do some analysis. But
19 the example I give there I think is fairly well
20 represented.

21 Q So sitting here today, you're unable to
22 provide any other examples of some areas that

1 would be consistent with the features recited in
2 claim 31?

3 A Well, the example I provided you I think
4 is a very good example that talks about the
5 features recited in the claim. You have an
6 instruction set that represents another
7 instruction set, includes a more generalized
8 instruction set that can be used more flexibly on
9 multiple different types of devices. You have a
10 more generalized instruction set, so you can have
11 the flexibility of using that on multiple devices.

12 Q What type of analysis would you need to
13 perform to be able to provide any other examples?

14 A Well, I mean, for instance, you may have
15 a -- let's say an autonomous vehicle, Toyota
16 Camry. An autonomous vehicle that's driving,
17 coming up to a crosswalk, and you see person in
18 the crosswalk and you provide an instruction set
19 for the Toyota to slow down in a reasonable amount
20 of time, come to a stop.

21 You may have a tractor-trailer as a second
22 autonomous device. A similar instruction set can

1 be applied on that tractor-trailer but the
2 parameters are different because you don't want to
3 brake as fast, perhaps. You want to accelerate
4 slowly. You don't want to swerve. You have
5 essentially a generalized instruction set that you
6 want the device to apply. You want to come to a
7 stop at some point, but each autonomous device
8 would do that differently. So the motorcycle, you
9 know, the three-wheeled motorcycle would stop
10 differently than a tractor-trailer would.

11 MR. STEPHENS: All right. Thank you,
12 Dr. Saber. We have no further questions.

13 MR. McCOMMAS: Yeah, sorry about that.
14 Can we go off the record?

15 MR. STEPHENS: Yes.

16 (A short break was taken.)

17 MR. McCOMMAS: We can go back on the
18 record.

19 Okay. We have no further questions for
20 the witness. This deposition is over. Thank you.

21 (Witness excused, 12:51 p.m. Eastern.)

22

1 C E R T I F I C A T E

2 I, RACHEL F. GARD, RPR, CCR, CRR, CSR No.
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7 herein, was previously duly sworn to tell the
truth, the whole truth, and nothing but the truth
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8 That the foregoing deposition was taken on
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10 That said deposition was taken down in
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IN WITNESS WHEREOF, I have hereunto set my
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3 1999 K Street, NW, Suite 600
4 Washington, DC 20006

5
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1 C E R T I F I C A T E

2 I, RACHEL F. GARD, RPR, CCR, CRR, CSR No.
3 084-3324, No. 9315, No. 1010, a Certified
4 Shorthand Reporter in and for the States of
5 Illinois, Michigan, Nevada at large, do hereby
6 certify that ELI SABER, PH.D., the deponent
7 herein, was previously duly sworn to tell the
truth, the whole truth, and nothing but the truth
in the aforementioned matter;

8 That the foregoing deposition was taken on
9 behalf of Plaintiff on the 21st day of June, 2024,
at 10:00 a.m. Eastern, pursuant to the applicable
rules;

10 That said deposition was taken down in
11 stenograph notes and afterwards reduced to
12 typewriting under my direction, and that the
13 typewritten transcript is a true record of the
14 testimony given by the said deponent; and that
15 signature was requested by the deponent and all
16 parties present;

17 That the parties were represented by their
counsel as aforementioned.

18 I do further certify that I am a disinterested
19 person in this cause of action, that I am not a
20 relative or attorney of either party or otherwise
21 interested in the event of this action, and that I
22 am not in the employ of the attorneys for any
party.

IN WITNESS WHEREOF, I have hereunto set my
hand and affixed my seal on this 8th
day of July, 2024.



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