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

ALIGN TECHNOLOGY, INC.,	)	
	)	
Petition,	)	
	)	
vs.	)	No. IPR2023-01369
	)	U.S. Patent
DENTAL MONITORING SAS,	)	No. 10,755,409
	)	
Patent Owner.	)	
_____	)	

DEPOSITION OF JOHN T. MONGAN, M.D., Ph.D.
Via Zoom Videoconference
Tuesday, July 23, 2024

Reported Stenographically by:
LAURIE HELD-BIEHL
CA CSR No. 6781
IL CSR No. 084002860
NJ CCR No. 30XI00239100
TX CSR No. 8555
WA CCR No. 21020748
RPR/CRR/RMR No. 32836
JOB No. 6801299

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3

4 ALIGN TECHNOLOGY, INC.,)
)
5 Petition,)
)
6 vs.) No. IPR2023-01369
) U.S. Patent
7 DENTAL MONITORING SAS,) No. 10,755,409
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8 Patent Owner.)
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14 Oral Deposition of JOHN T. MONGAN,
15 M.D., Ph.D., pages 1 through 153,
16 taken on behalf of Petitioner via Zoom
17 Videoconference beginning at
18 10:11 a.m. and ending at 4:21 p.m.
19 on Tuesday, July 23, 2024, reported
20 stenographically by LAURIE HELD-BIEHL,
21 California Certified Shorthand
22 Reporter No. 6781, Illinois Certified
23 Shorthand Reporter No. 084002860,
24 New Jersey Certified Court Reporter
25 No. 30XI00239100, Texas Certified

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Shorthand Reporter No. 8555,
Washington Certified Court Reporter
No. 21020748 and Registered
Professional Reporter, Certified
Realtime Reporter, Registered Merit
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14 (Via Zoom Videoconference.)
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Via Zoom Videoconference

Tuesday, July 23, 2024

10:11 a.m. - 4:21 p.m.

THE REPORTER: This is the remote deposition of
Dr. John Mongan, M.D., Ph.D., in the matter of
Align Technology v Dental Monitoring SAS.

Today's date is Tuesday, July 23, 2024, and
the time is approximately 10:11 a.m.

Counsel, would you please identify
yourselves for the record, state whom you represent,
and agree on the record that there is no objection to
me swearing in the witness via videoconference.

MR. ARGENTI: Matt Argenti, Wilson Sonsini,
representing petitioner Align. 10:11

No objection to swearing in the witness.

MR. BLYTHE: Andrew Blythe of Gibson, Dunn &
Crutcher on behalf of Dental Monitoring and the
witness.

No objection to swearing in the witness. 10:11

MR. MEDLEY: Patrick Med- -- pardon me.

Patrick Medley from Wilson Sonsini
representing Align.

(Witness sworn.)

THE WITNESS: Yes, I do. 10:11

1 THE REPORTER: Thank you very much. I'm going
2 off camera.

3
4 JOHN T. MONGAN, M.D., Ph.D.,
5 having been first duly sworn
6 and administered an oath
7 pursuant to California CCP 2094,
8 was examined and testified as follows:

9
10 EXAMINATION 10:12

11 BY MR. ARGENTI:

12 Q Good morning, Dr. Mongan.

13 A Good morning.

14 Q Could you please state your full name for
15 the record? 10:12

16 A Sure.

17 My name is John Thomas Mongan.

18 Q And where are you currently located?

19 A I'm currently sitting in the offices of
20 Gibson, Dunn in San Francisco. 10:12

21 Q Is there anyone else in the room with you
22 today?

23 A There's no one else in the room with me
24 right now.

25 Q If that changes throughout the day will you 10:12

Page 7

1 let me know if anyone else joins you in the room,
2 please?

3 A I will.

4 Q Okay. It's my understanding that you have
5 printed copies of your declaration and the exhibits 10:12
6 that it cites available to you today; is that true?

7 A I believe so.

8 Q And are those copies clean with no notes?

9 A To the best of my knowledge. I have not
10 made any notes in them. 10:12

11 Q Okay. Do you have any notes with you?

12 A I do not have any notes accessible to me or
13 open on my computer.

14 Q Have you given a deposition before?

15 A I've given a deposition before. 10:13

16 Q About how many times?

17 A One time.

18 Q When was that?

19 A It was several months ago.

20 Q And was that in relation to the dispute 10:13
21 between Dental Monitoring and Align?

22 A Yes.

23 MR. BLYTHE: Objection to form.

24 Sorry, just give me one minute to object.

25 Object to the form. 10:13

1 BY MR. ARGENTI:

2 Q I just want to make sure we get your answer
3 there, Dr. Mongan.

4 A Yes. It was in relation to a matter between
5 Dental Monitoring and Align. 10:13

6 Q And you were serving as an expert for
7 Dental Monitoring in that deposition?

8 A Yes, I was serving as an expert.

9 Q So is this your first deposition in the
10 inter partes review proceeding? 10:13

11 A Yes, it is.

12 Q And I may use the acronym "IPR" to refer to
13 an "inter partes review."

14 Will you understand what I'm talking about?

15 A Yes, I will understand that "IPR" refers to 10:14
16 an inter partes review.

17 Q You may be familiar with how things work in
18 a deposition from your previous experience but I'm
19 just going to quickly go through some of the ground
20 rules. 10:14

21 Do you understand that you're providing your
22 testimony under oath and you are expected to tell the
23 truth?

24 A I understand that I'm under oath and
25 expected to tell the truth. 10:14

1 Q Is there any reason that you cannot provide
2 complete and accurate testimony today?

3 A I'm not aware of any reason why I can't
4 provide complete and accurate -- accurate testimony.

5 Q Hopefully, my questions are clear. If you 10:14
6 do not understand my questions, please let me know
7 that it is unclear.

8 Under the guidelines in this proceeding you
9 must ask me for any clarification. If you do not
10 tell me otherwise, I will assume that you understand 10:14
11 the question. Okay?

12 MR. BLYTHE: Objection to form.

13 You can answer.

14 THE WITNESS: If I have questions -- if I --

15 If I would like clarification about your 10:14
16 question, I will ask for clarification.

17 BY MR. ARGENTI:

18 Q Please provide verbal answers rather than
19 nodding your head for the benefit of the record and
20 the reporter; okay? 10:15

21 A I will try to remember to provide verbal
22 responses to all your questions. And if I -- if I do
23 not, then I'm happy to be reminded to provide a
24 verbal response.

25 Q We can take a break any time that you would 10:15

1 like one as long as there is not a question pending;
2 if there is a question pending, you must answer the
3 question before we take a break.

4 Do you understand?

5 MR. BLYTHE: Objection to form. 10:15

6 You can answer.

7 THE WITNESS: I understand that I can take a
8 break at any time and that if there is a question
9 pending, that I need to answer that question before
10 the break. 10:15

11 BY MR. ARGENTI:

12 Q And we'll probably take breaks -- I would
13 try to remember to take breaks every hour or so but
14 if you'd like one before I suggest one, just feel
15 free to ask; okay? 10:15

16 A Okay.

17 Q You're being compensated for your testimony
18 in this proceeding, right?

19 A That's correct.

20 Q Your hourly rate is \$800 an hour; is that 10:16
21 right?

22 A Yes, that's correct.

23 Q Is all your compensation in this matter
24 being paid at that same rate?

25 A My travel time is being paid at a lower 10:16

1 rate.

2 Q What's that rate?

3 A \$400 per hour.

4 Q How much have you billed Dental Monitoring
5 to date for your work in this IPR? 10:16

6 A I -- I don't know.

7 Q Would it be more than \$50,000?

8 A I don't think so.

9 Q How much have you billed Dental Monitoring
10 to date for all your work in the dispute with Align, 10:17
11 including the district court case?

12 A I don't know.

13 MR. BLYTHE: Objection. Form.

14 You can answer.

15 BY MR. ARGENTI: 10:17

16 Q Aside from your work for Dental Monitoring
17 in the dispute with Align, have you ever worked as an
18 expert in any other patent case?

19 A I have done work as an expert for
20 Dental Monitoring in -- in a dispute with a different 10:17
21 company.

22 Q But you were not deposed in that case?

23 A I have not been deposed in that case.

24 Q Did you submit any expert reports or
25 declarations in that case? 10:18

1 A I have submitted at least a declaration.

2 Q Who was the other party in that case?

3	A	Get-Grin.
---	---	-----------

4 Q Have you ever been a witness in litigation

5 | that was not a patent case? 10:18

6	A No, I haven't.
---	------------------

7 Q And you understand that you are here today

8 with regard to one particular IPR proceeding,

9	correct?
---	----------

10	A	My understanding is that I'm here with	10:18
----	---	--	-------

11 regard to the 409 IPR.

12	Q That's right.
----	-----------------

13 So the IPR in question is IPR2023-01369, and

14 I'll give the full number of the patent, although you

15 just referred to it, but that IPR is related to 10:18

16 US Patent Number 10,755,409.

17 Does that sound right?

18	A	That matches the case number and patent
----	---	---

19 number that I have on the front page of my

```
20 | declaration.                                     10:19
```

21 Q And if I use the same shorthand that you

22 just used and refer to the patent as "the 409 Patent"

23 today, will you understand what I'm talking about?

24 A I will understand that "the 409 Patent"

25	refers to the longer patent number that you just	10:19
----	--	-------

1 mentioned.

2 Q So if you have it available to you, can you
3 please pull out your declaration for the 409 Patent;
4 that's Exhibit 2028 to be precise. I think you
5 submitted two declarations in this IPR, I'm going to 10:19
6 ask you about Exhibit 2028 right now.

7 A Okay. I've got that.

8 Q Do you have that there?

9 A Yes.

10 Q Could you turn to page 142, please? I 10:19
11 believe that's the last page.

12 A Okay.

13 Q Is that your signature in this declaration?

14 A So my name is typed on the signature line
15 and I was -- I typed my name there as an electronic 10:20
16 signature.

17 Q Prior to typing your name as an electronic
18 signature on this declaration, did you carefully
19 review the declaration to ensure its accuracy?

20 A Yes. 10:20

21 Q Is there anything today that you believe is
22 inaccurate in your declaration?

23 A In reviewing the declaration in preparation
24 for today, I noticed that there is in one place a
25 citation to Kusnoto with some section numbers. I'm 10:20

1 not sure where that citation came from and I'm not
2 sure what document that references.

3 Q Do you know what page that's on that you're
4 referring to?

5 A I'm sorry, I don't remember what page it's 10:21
6 on.

7 Q Aside from that, is there anything about
8 your declaration that you would like to correct or
9 modify today?

10 A There's nothing at this time that I'd like 10:21
11 to modify or correct about the declaration.

12 Q About how many hours did you spend
13 preparing your declaration addressing the 409 Patent,
14 Exhibit 2028?

15 A I don't know for certain. 10:21

16 Q Did you --

17 A I would --

18 Sorry?

19 Q Who wrote this declaration?

20 MR. BLYTHE: And Dr. Mongan, let me caution you, 10:22
21 in discussing or answering that question, please
22 don't go into the substance of any communications
23 with counsel.

24 THE WITNESS: The document started with
25 materials that I wrote and I exchanged drafts back 10:22

1 and forth with counsel with each of us adding
2 material.

3 BY MR. ARGENTI:

4 Q If you'd turn to page 65 of your
5 declaration, please. 10:22

6 In the top paragraph of that declaration, I
7 think it's paragraph 116 that carries over from the
8 previous page, it looks like there's a citation to
9 Kusnoto and then some sections.

10 Is that what you were referring to earlier? 10:22

11 A Yes, that's what I was referring to.

12 Q Did you do anything to prepare for this
13 deposition?

14 A Yes.

15 MR. BLYTHE: Again, Dr. Mongan, just to caution 10:23
16 you, as you -- as you answer that, please don't go
17 into the substance of any of the communications or
18 meetings that you've had with counsel within your
19 preparation; but you can answer otherwise.

20 THE WITNESS: Yes, I did prepare for this 10:23
21 deposition.

22 BY MR. ARGENTI:

23 Q What did you do?

24 MR. BLYTHE: Same instruction.

25 THE WITNESS: I met with Mr. Blythe and I 10:23

1 reviewed some of the -- I reviewed documents on my
2 own.

3 BY MR. ARGENTI:

4 Q What documents did you review?

5 A I independently reviewed my declaration and 10:23
6 the 409 Patent.

7 Q Anything else?

8 A Those were the only documents that I
9 independently reviewed.

10 Q What do you mean by "independently 10:23
11 reviewed"?

12 A I don't --

13 MR. BLYTHE: And, again, Dr. Mongan, as -- as
14 you answer these questions, please don't go into the
15 substance of any of the communications that you've 10:24
16 had with counsel.

17 THE WITNESS: By "independently reviewed" I mean
18 reviewed on my own, outside of a conversation or
19 meeting with counsel.

20 BY MR. ARGENTI: 10:24

21 Q Did you review other documents as part of a
22 conversation or meeting with counsel?

23 MR. BLYTHE: And Dr. Mongan, you can answer that
24 question "yes" or "no," but don't go any further.

25 THE WITNESS: Yes. 10:24

1 BY MR. ARGENTI:

2 Q What documents were those?

3 MR. BLYTHE: I'm going to instruct the witness
4 not to answer that question as it goes into
5 attorney/client privilege. 10:24

6 MR. ARGENTI: Is the witness your client?

7 MR. BLYTHE: I'm representing him today in this
8 deposition.

9 MR. ARGENTI: You're invoking attorney/client
10 privilege with the expert witness testifying on 10:24
11 behalf of Dental Monitoring; is that right?

12 MR. BLYTHE: I am protecting the work product
13 that we have.

14 Yeah, I'm protecting work product.

15 BY MR. ARGENTI: 10:25

16 Q Did you, Dr. Mongan, review any of the prior
17 art at issue in this case in preparing for this
18 deposition?

19 MR. BLYTHE: Dr. Mongan, if -- if the answer to
20 that question goes into discussions you had with 10:25
21 counsel in preparing for this deposition, then I'd
22 instruct you not to answer that.

23 THE WITNESS: The two documents that I
24 independently reviewed were my declaration and the
25 409 Patent as part of my preparation for this 10:25

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1 deposition.

2 BY MR. ARGENTI:

3 Q That wasn't my question.

4 And if you're going to decline to answer my
5 question, Dr. Mongan, on the instructions of counsel, 10:25
6 I just need it clear for the record.

7 Did you review any of the prior art at issue
8 in this IPR in preparation for your deposition?

9 MR. BLYTHE: And Dr. Mongan, if you can't answer
10 that question without going into the substance of 10:26
11 communications with counsel, please don't answer.

12 THE WITNESS: Can I take a minute to confer with
13 Mr. Blythe about this question of privilege?

14 MR. BLYTHE: Yes, we can.

15 We can go off the record and discuss that. 10:26

16 MR. ARGENTI: Yep. That's okay.

17 So we'll go off the record. You guys need a
18 short break?

19 MR. BLYTHE: Yeah. We'll notify you when we're
20 ready to come back. 10:26

21 MR. ARGENTI: Okay.

22 (Off the record.)

23 BY MR. ARGENTI:

24 Q Okay. Dr. Mongan, so I think the question
25 pending was did you review any of the prior art at 10:29

1 issue in this IPR in preparation for your deposition?

2 A I'm unable to answer that question on the
3 advice of counsel.

4 Q I'm just going to get a little more
5 specific, Dr. Mongan. 10:29

6 In preparation for your testimony in this
7 deposition, did you review the Salah prior art
8 reference that's an exhibit in this IPR?

9 MR. BLYTHE: Same objection and instruction.

10 THE WITNESS: I'm unable to answer that question 10:30
11 on the advice of counsel.

12 BY MR. ARGENTI:

13 Q In preparation for this deposition, did you
14 review the Carrier prior art reference that's an
15 exhibit in this IPR? 10:30

16 MR. BLYTHE: Same objection and instruction,
17 Dr. Mongan, to the extent answer that question would
18 reveal communications with counsel.

19 THE WITNESS: I'm unable to answer that question
20 on the advice of counsel. 10:30

21 BY MR. ARGENTI:

22 Q In preparation for this deposition did you
23 review the Maninis prior art reference that's an
24 exhibit in this IPR?

25 MR. BLYTHE: Same objection and instruct. 10:30

1 THE WITNESS: I'm unable to answer that question
2 on the advice of counsel.

3 BY MR. ARGENTI:

4 Q In preparation for this deposition did you
5 review the deposition transcript of Dr. Hassan 10:31
6 Foroosh that was submitted in this IPR?

7 MR. BLYTHE: Same objection and instruction.

8 THE WITNESS: I'm unable to answer that question
9 on the advice of counsel.

10 BY MR. ARGENTI: 10:31

11 Q Have you reviewed the institution decision
12 from the PTAB in this IPR?

13 MR. BLYTHE: I'm sorry, hold on one second.

14 You can answer that.

15 THE WITNESS: Yes, I have. 10:31

16 BY MR. ARGENTI:

17 Q When did you review that?

18 A I don't recall the exact date. It was over
19 a month ago.

20 Q Was that the only time that you reviewed the 10:31
21 institution decision in this IPR?

22 A I don't remember.

23 Q Did you review the institution decision in
24 this IPR in preparation for your deposition today?

25 MR. BLYTHE: Dr. Mongan, same objection and 10:32

1 instruction regarding the documents.

2 THE WITNESS: I'm unable to answer that question
3 on the advice of counsel.

4 BY MR. ARGENTI:

5 Q Can we turn to page 10 of your declaration, 10:32
6 please, Exhibit 2028.

7 A I'm on page 10.

8 Q In paragraphs 20 and 21 you identify the
9 material that you considered in forming your
10 opinions, correct? 10:32

11 A Yes.

12 Q Did you consider any other materials beyond
13 what's identified here in these paragraphs?

14 A I don't recall having considered any other
15 materials. 10:33

16 Q Did you meet with anyone to prepare for your
17 deposition?

18 A Yes, I did.

19 Q Who did you meet with?

20 A I met with Mr. Blythe. 10:33

21 Q Anyone else?

22 A I don't recall that I met with anyone else
23 to prepare for the deposition.

24 Q When did you meet with Mr. Blythe?

25 A On two occasions over the last week or so. 10:33

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1 Q How long did those meetings last for?

2 A The first meeting lasted for approximately
3 an hour. And the second lasted for the better part
4 of a day.

5 Q You got your bachelor's degree in chemistry 10:34
6 from Stanford, correct?

7 A Yes, I have a bachelor's degree in chemistry
8 from Stanford.

9 Q And then you received a Ph.D. in
10 bioinformatics from UCSD; is that right? 10:34

11 A Yes, that's correct.

12 Q What is "bioinformatics"?

13 A Bioinformatics is an interdisciplinary field
14 that combines the disciplines of -- combines multiple
15 disciplines including biology, computer science and 10:34
16 statistics.

17 Q How did you end up pursuing a Ph.D. in
18 bioinformatics after studying chemistry as an
19 undergrad?

20 MR. BLYTHE: Objection to form. 10:35

21 You can answer.

22 THE WITNESS: Can -- can you clarify your
23 question? Are you asking me for the -- the process
24 that I went through to matriculate as a graduate
25 student in bioinformatics? 10:35

1 BY MR. ARGENTI:

2 Q Well, I guess probably not quite.

3 So you mentioned three disciplines that are
4 combined in the field of bioinformatics: biology,
5 computer science and statistics, right? 10:35

6 A It includes those three fields.

7 Q And none of those is chemistry; so I'm just
8 curious what led you to bioinformatics after
9 receiving your undergraduate degree in chemistry.

10 MR. BLYTHE: Objection to form. 10:36

11 You can answer.

12 THE WITNESS: I was a chemistry major and a
13 pre-medical student. My interest in chemistry was
14 particularly focused on biochemistry and the
15 chemistry of living things. And within the biology 10:36
16 wing of bioinformatics is included biochemistry and
17 biophysics. And I have a longstanding background in
18 computers and computer science and so bioinformatics
19 provided a -- a -- a natural fusion between my
20 interests in biology, biochemistry and medicine and 10:36
21 my background and interests in computers and computer
22 simulation.

23 BY MR. ARGENTI:

24 Q Did you study computer science at all as
25 part of your undergraduate degree in chemistry? Was 10:37

1 it a minor, anything like that?

2 MR. BLYTHE: Objection to form.

3 You can answer.

4 THE WITNESS: I had formal coursework in
5 computer science as part of my graduate degree. I 10:37
6 did not have formal coursework in computer science as
7 part of my undergraduate degree, but I worked as a
8 programmer throughout my time as an undergraduate and
9 also wrote a book on computer programming shortly
10 after I graduated. 10:37

11 BY MR. ARGENTI:

12 Q What are some typical areas of science or
13 medicine where bioinformatics is used?

14 A Bioinformatics is a broad field and it means
15 different things to different people. Broadly, I 10:38
16 would consider bioinformatics to be the application
17 of -- the application of computers to biologic and
18 biomedical problems.

19 Q What are some of those problems that
20 bioinformatics might be applied to? 10:38

21 A So with the broad definition of
22 bioinformatics that I would tend to work from of it
23 being the application of computers to biologic and
24 biomedical problems, it could include my research in
25 artificial intelligence and radiology. It would 10:38

1 include the work I did as a graduate student in
2 computer simulation of biomolecules and drug design.
3 It could include a lot of genetics and genomics work.
4 It's a -- a broad field and could include many, many
5 things. 10:39

6 Q In addition to your Ph.D., you also have a
7 medical degree; is that right?

8 A Yes, that's correct.

9 Q You do not have a dental degree though,
10 correct? 10:39

11 A I do not have a dental degree.

12 Q Do you consider yourself a dental
13 professional?

14 A I do not consider myself a dental
15 professional. 10:39

16 Q Do you have any professional experience in
17 the field of dentistry?

18 A I have no professional experience in the
19 field of dentistry, which is one of the reasons why I
20 consulted with a dental and orthodontic professional 10:39
21 in this matter.

22 Q So just in case there's any distinction
23 between dentistry and orthodontics, I'll ask you do
24 you have any professional experience in the field of
25 orthodontics? 10:40

1 A I have no professional experience in the
2 field of orthodontics.

3 Q Let's turn to page 25 of your declaration,
4 please. And we'll look at paragraph 51.

5 Let me know when you're there. 10:40

6 A I'm there.

7 Q And toward the end of that paragraph you say
8 that you have consulted with Dr. Budi Kusnoto, DDS,
9 MS, in forming your opinions, including as
10 specifically noted throughout your report. 10:40

11 Do you see that?

12 MR. BLYTHE: Objection to form.

13 You can answer.

14 THE WITNESS: I see the last sentence at
15 paragraph 51. 10:40

16 BY MR. ARGENTI:

17 Q Is that what you were just referring to in
18 your earlier answer when you said that you had
19 consulted with a dental professional in forming your
20 opinions? 10:41

21 A Yes, I was referring to consulting with
22 Dr. Kusnoto.

23 Q So is it accurate to say that you relied on
24 Dr. Kusnoto's views to inform you as to the
25 understanding a dental professional would have as to 10:41

Page 27

1 certain prior art in this IPR?

2 MR. BLYTHE: Objection to form.

3 You can answer.

4 THE WITNESS: My consultation with Dr. Kusnoto
5 informed me of how a dental professional would 10:41
6 understand terms and concepts in the material that I
7 was reviewing.

8 BY MR. ARGENTI:

9 Q Are you aware that Dr. Kusnoto submitted a
10 declaration in this IPR? 10:41

11 A I'm aware he submitted a declaration.

12 Q Have you reviewed Dr. Kusnoto's declaration?

13 A I have not seen Dr. Kusnoto's declaration.

14 Q How many discussions with Dr. Kusnoto have
15 you had regarding the materials in this IPR? 10:42

16 A I don't recall the exact number, at least
17 two.

18 Q When did those take place?

19 A I don't recall the exact dates.

20 Q Were they both before you submitted your 10:43
21 declaration in this case?

22 A Yes.

23 Q Who was present at those discussions between
24 you and Dr. Kusnoto?

25 A Dr. Kusnoto, some of the 10:43

1 Gibson, Dunn attorneys and me.

2 Q Were the Gibson, Dunn attorneys
3 participating in the discussion?

4 A My recollection is that all parties spoke
5 and participated. 10:43

6 Sorry.

7 My recollection is that I spoke and
8 participated, Dr. Kusnoto spoke and participated, and
9 at least one of the attorneys spoke and participated.

10 Q So I think -- I think we probably need to be 10:44
11 a little more precise when I ask you about whether
12 these discussions took place before you submitted
13 your declaration in this case because now I'm
14 remembering you've submitted two declarations in
15 these cases -- or in this particular IPR; there was 10:44
16 the declaration for institution that's been labeled
17 Exhibit 2002 and then there's the declaration that
18 I've been asking you about which is Exhibit 2028,
19 right?

20 A Let me look at the other exhibit you're 10:44
21 referencing so that I make sure that that's --

22 You said 2028?

23 Q 2028 is the one that we've been looking at.
24 And then 2002 was your first declaration in this IPR.

25 A Yes, I have both of those declarations here 10:45

1 in front of me.

2 Q Okay. So these discussions, the two
3 discussions at least that you remember having with
4 Dr. Kusnoto, you testified that they were -- that
5 they took place before you submitted your declaration 10:45
6 in this case but I'm going to break it up a little
7 bit more because with these two declarations now in
8 mind.

9 So did the two discussions that you
10 referenced with Dr. Kusnoto take place before you 10:45
11 submitted your first declaration, Exhibit 2002?

12 MR. BLYTHE: Objection to form.

13 You can answer.

14 THE WITNESS: My most recent -- my most recent
15 conversation with Dr. Kusnoto was after the 10:46
16 submission of the first declaration. I don't
17 remember what the temporal relationship of my first
18 consultation with Dr. Kusnoto and the submission of
19 the first declaration was.

20 BY MR. ARGENTI: 10:47

21 Q Were the issues that you discussed with
22 Dr. Kusnoto limited to the ones where you
23 specifically refer to him in your declaration,
24 Exhibit 2028?

25 A I don't recall for certain. 10:47

1 Q You don't recall whether you discussed with
2 Dr. Kusnoto other issues beyond those where you
3 identify in your declaration that you have an
4 understanding based on Dr. Kusnoto?

5 A There may have been but I don't -- I don't 10:48
6 remember.

7 Q Did Dr. Kusnoto give you any information
8 about the understanding of a dental professional that
9 you ultimately decided not to incorporate into your
10 declaration? 10:48

11 A So I spoke with Dr. Kusnoto for some time,
12 certainly not every word that he said made -- you
13 know, certainly not every word that he said is
14 represented in this declaration. But the relevant
15 points that I took -- that I understood from him are 10:48
16 represented in this declaration.

17 Q Can you identify for me what information
18 you got from Dr. Kusnoto that you decided was not
19 relevant to your opinions?

20 MR. BLYTHE: Objection to form. 10:49

21 You can answer.

22 THE WITNESS: I don't recall specific
23 information that I received from Dr. Kusnoto that I
24 decided was not relevant.

25 BY MR. ARGENTI: 10:49

1 Q Have you had any discussions with
2 Dr. Kusnoto that took place after you signed your
3 declaration in this case?

4 A Can you clarify which declaration you're
5 referring to? 10:50

6 Q Good point.
7 Have you had any discussions with
8 Dr. Kusnoto that took place after you signed your
9 second declaration in this case, Exhibit 2028?

10 A I don't recall of any conversations with 10:50
11 Dr. Kusnoto regarding this IPR after the date at
12 which I had signed Exhibit 2028.

13 Q What experience do you have with deep
14 learning and neural networks?

15 A It's a field that I've been working in for 10:51
16 quite some time, mostly with the application to
17 radiologic problems because I'm a radiologist; so I
18 have experience with conducting my own original
19 research and constructing algorithms for radiologic
20 purposes, reviewing particles related to deep 10:51
21 learning.

22 I'm on the radiology -- the editorial board
23 for the Journal of Radiology Artificial Intelligence,
24 and also with organizing and supervising artificial
25 intelligence and deep learning competitions. 10:52

1 Q What kind of competitions?

2 A Competitions that are run through the Kaggle
3 platform under the auspices of the Radiological
4 Society of North America.

5 Q You're a coauthor on a paper entitled 10:52
6 "High-Throughput Classification of Radiographics
7 Using Deep Convolutional Neural Networks," correct?

8 A That sounds familiar.

9 Do you have a copy of my CV that I can
10 confirm whether or not that's the correct title? 10:52

11 Q Well, instead of that, what I will suggest
12 is that I will get this uploaded to Exhibit Share --

13 A Okay.

14 Q -- the paper itself; so just bear with me
15 one second. 10:53

16 A While you're doing that, I'm just going to
17 go adjust the thermostat in here; it's getting kind
18 of cold in this room.

19 Q Sure.

20 I believe I have uploaded it so it should be 10:53
21 available to you through Exhibit Share.

22 A I see Exhibit 1033.

23 Q And are you able to download it or otherwise
24 view the entire document?

25 A I'm working on that. Give me just a second. 10:54

1 MR. BLYTHE: Counsel, I'll just note for the
2 record that the exhibit stamp appears to be covering
3 some of the text under the first page of the exhibit.

4 MR. ARGENTI: Understood. I think we will --

5 If and when we were to submit this as an 10:54
6 exhibit in the IPR, we would relabel it with the same
7 exhibit number, Exhibit 1033, but a different format
8 to avoid that text.

9 And if the label is an issue at all -- I
10 don't think it will be but if there is an issue at 10:55
11 all, we can figure out a workaround but hopefully
12 that's not a problem.

13 MR. BLYTHE: Well, I'm not going to dictate to
14 you how you're going to manage the exhibits. But
15 since this is coming into the record, I'm going to go 10:55
16 ahead and object to this exhibit, including on the
17 basis that it's incomplete, has a stamp covering part
18 of the words.

19 I'm also going to object to this exhibit on
20 the grounds of hearsay, authenticity and relevance. 10:55

21 THE WITNESS: I have the document open in front
22 of me now.

23 MR. ARGENTI: Great.

24 You know what I'm actually going to try and
25 do, though, is it possible -- 10:55

1 Let's go off the record for this.

2 (Off the record.)

3 MR. ARGENTI: All right. Back on the record.

4 Q Dr. Mongan, just to fill in -- get the
5 transcript up to speed, what I did when we were off 10:57
6 the record was upload a second copy of the same paper
7 to the Exhibit Share system; this one does not have
8 the exhibit-numbered label on the bottom corner of
9 the first page, so hopefully we can avoid any issues
10 about a partial copy or obscuring of the contents. 10:58

11 So ultimately this exhibit will be given the
12 designation of Exhibit 1033, that's how I will refer
13 to it today, to the extent that I use an exhibit
14 number, but we can look at the copy that is unlabeled
15 and doesn't have the sticker on the first page that's 10:58
16 obscuring this content.

17 Does that sound good to you?

18 A I have the unlabeled copy in front of me.

19 MR. BLYTHE: And one moment.

20 So just to clarify for the record, there's a 10:58
21 PDF whose title is "Exhibit 1034" and that's going to
22 be treated as Exhibit 1033 today?

23 MR. ARGENTI: Correct. I think that probably,
24 if anything, confuses the record because what will
25 matter will be what's uploaded to the PTAB's system 10:58

1 and this paper entitled "High-Throughput
2 Classification of Radiographics Using Deep
3 Convolutional Neural Networks" will have an
4 IPR exhibit number of 1033 and we will be referring
5 today to the label -- the version of it that does not 10:59
6 have an exhibit sticker label on it.

7 MR. BLYTHE: Okay. I will note for the record
8 that the CFR requires that these exhibits are stamped
9 as they go into the record in deposition in
10 accordance with the filing requirements for exhibits, 10:59
11 but I think I understand that the exhibit whose
12 PDF is labeled "1034" will be Exhibit 1033 going
13 forward in the deposition.

14 I preserve the same objections as before.

15 BY MR. ARGENTI: 10:59

16 Q So Dr. Mongan, do you recognize this as a
17 paper on which you are a coauthor?

18 A I see my name on this paper and this looks
19 like a paper that I published, yes.

20 Q According to your CV, this paper was 11:00
21 published in the Journal of Digital Imaging in
22 February 2017; is that accurate?

23 A So I recall that this paper was published in
24 the Journal of Digital Imaging. I see on the
25 document that you've provided for me that it says 11:00

1 "Published online: 11 October, 2016." I don't have a
2 copy of my CV in front of me to see what the -- what
3 I would have listed as the publication date there
4 which would likely refer to the publication in the
5 paper version of the journal. 11:00

6 Q If you'd like, you have a copy of your CV
7 available there to you; that's Exhibit 2029.

8 A I'm looking for that now.

9 Yes.

10 Q And if you turn to page 34 of your CV, 11:01
11 Exhibit 2029 --

12 A Yes, I'm on page 34.

13 Q -- is this paper listed in entry 20 on that
14 page?

15 A Entry 10 -- entry 20 has the same title as 11:01
16 the document that you've put in front of me, yes.

17 Q Do you understand that to be this paper that
18 is the Exhibit 1033?

19 A I have no reason to believe otherwise.

20 Q And for entry 20 it states that it was 11:02
21 published in the Journal of Digital Imaging in 2017,
22 February, correct?

23 A So in my CV the date associated with that --
24 with that publication is February 2017, which I
25 believe refers to the paper publication date. And, 11:02

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1 again, I note that it says "Published online:
2 11 October, 2016" in the document that you've
3 provided to me.

4 Q Do you have any reason to doubt that this
5 paper was published online in October 2016 and 11:02
6 published in a paper copy in February of 2017?

7 A I have no reason to doubt that.

8 Q At a high level, what were you studying in
9 connection with this article?

10 MR. BLYTHE: Objection to form. 11:02

11 You can answer.

12 THE WITNESS: So it's been several years since I
13 published this, I'd like to review it for just a
14 couple minutes before I answer that question.

15 BY MR. ARGENTI: 11:03

16 Q Sure.

17 A So at a high level, we were working to
18 develop a deep learning algorithm that could
19 distinguish between frontal and lateral chest
20 radiographs and then to test the performance of that 11:03
21 algorithm.

22 Q What was your role in that research?

23 A My role in the research was as one of the --
24 what was as the senior author. In that role, I
25 helped to -- 11:04

1 In that role, I helped to develop the
2 research question to guide the research that was
3 performed, to obtain and curate the dataset, and to
4 organize, draft and edit the paper.

5 Q The research described in this paper used a 11:04
6 deep convolutional neural network, correct?

7 A The research in this paper used the
8 GoogLeNet model. I don't have that reference in
9 front of me to confirm with certainty but I believe
10 that it would be characterized as a deep 11:05
11 convolutional neural network.

12 Q And is that "GoogLeNet model" that you just
13 referred to the one that's discussed in the top left
14 column on page 97 of this paper?

15 A Yes, that's what I'm referring to. 11:06

16 Q So that's with reference to note 19, which
17 is attributed to Szegedy, S-Z-E-G-E-D-Y, et al.?

18 A Yes.

19 Q Were you personally involved in training the
20 neural network used in this research? 11:06

21 A Can you clarify what you mean by "personally
22 involved"?

23 Q What was the extent of your involvement in
24 training the network -- neural network used in this
25 research? 11:06

1 A My involvement -- excuse me. My involvement
2 was to participate --

3 So this was a group project, as most science
4 is, and my role as a senior member of that group was
5 to help select which network we used, to help design 11:07
6 the experiments that were conducted, to troubleshoot
7 problems with the training and to analyze the results
8 of -- of the training.

9 Q Now, this paper explains that you and your
10 team started with 1885 images from 909 patients, 11:07
11 right?

12 A Can you give me the reference to the
13 location that you're getting that from in the --

14 Q Sure.

15 Why don't we look at page 96 in the first 11:08
16 paragraph under the heading "Image Collection and
17 Training, Validation, and Test Set Creation."

18 A Okay. And can you repeat your question,
19 please?

20 Q Sure. 11:08

21 In this paper you explain that you and your
22 team started with 1885 images from 909 patients,
23 correct?

24 A That's what it says here and that matches my
25 recollection, to the extent that I can recall the 11:09

1 approximate magnitudes of the data we were using and
2 working with.

3 Q And then in this section on the same page,
4 for example, a couple paragraphs further down, you
5 explain that your team then split those images into 11:09
6 training, validation and test sets, correct?

7 A The paper here says "The images were then
8 randomly split into training, validation and test
9 sets."

10 Q The initial training set has 1129 images, 11:09
11 correct?

12 A That's what it says here, yes.

13 Q Is that accurate?

14 A I can't recall the exact --

15 You know, I can't independently recall the 11:10
16 exact number of images that would have been in the
17 training set from research that I did eight years
18 ago. I have no recollection of that --

19 Q Do you have any reason to doubt the accuracy
20 of this paper on which you're a coauthor? 11:10

21 MR. BLYTHE: Hang on.

22 Were you done answering that question,
23 Dr. Mongan?

24 THE WITNESS: I wasn't quite done answering that
25 question. 11:10

1 MR. ARGENTI: Oh.

2 THE WITNESS: I have no reason to doubt the
3 accuracy of this paper, assuming that you took -- the
4 document that I have in front of me is -- you know,
5 is the paper that I published. 11:10

6 But I have -- I can't independently recall
7 what the number is.

8 BY MR. ARGENTI:

9 Q Do you have any reason to doubt that the
10 paper you have in front of you is the paper you 11:10
11 published?

12 A I have no reason to doubt that.

13 Q So this section under the "Methods" heading
14 on page 96 your paper goes on to describe augmenting
15 the training set by applying image transformations to 11:11
16 this set, right?

17 A Yes.

18 Q And the paper says that each initial image
19 resulted in 106 child images, correct?

20 A Yes, it does. 11:11

21 Q And it also says that the labeling from the
22 initial parent image was carried over to the
23 respective child images, right?

24 A It says the label -- it says "child images
25 with the label inherited from the parent image." 11:11

1 Q And as a result of the transformation
2 augmentations, you then had a learning base of
3 119,674 training images, correct?

4 MR. BLYTHE: Objection to form.

5 You can answer. 11:12

6 THE WITNESS: That's not how I'd characterize
7 the statement in -- in this paper.

8 BY MR. ARGENTI:

9 Q How would you characterize it?

10 A I would say that our training -- 11:12

11 Assuming you're using learning base in the
12 context that it's used in the 409 Patent, I would say
13 that we had a learning base of 1129 images and that
14 we performed augmentation on that learning base of
15 1129 images. 11:12

16 Q So in your view, once there were
17 transformation augmentations applied to 1129 images
18 the result was no longer a learning base?

19 MR. BLYTHE: Objection to form.

20 You can answer. 11:12

21 THE WITNESS: My opinion is that a POSA would
22 consider the most accurate characterization of the
23 size of the learning base to be the number of
24 independent images. The augmented images are all --
25 the augmented images that come from a single parent 11:13

1 image are all very similar to each other and are not
2 independent.

3 BY MR. ARGENTI:

4 Q But in any event, the 119,674 augmented
5 images were the images that you used to train your 11:13
6 neural network, correct?

7 A Those were the images that we used to train
8 the neural network.

9 I'd like to contextualize that by noting
10 that augmentation is a standard practice in training 11:13
11 for deep learning. And typically in modern deep
12 learning, augmentation is applied randomly on -- on
13 the fly each time an image is trained on, such that
14 there are effectively an infinite number of augmented
15 images. 11:14

16 In this particular investigation, because it
17 was so long ago and because the tools that we were
18 using were limited and did not have the ability to
19 randomly perform augmentation on the fly, we had to
20 manually produce a set of augmented images in order 11:14
21 to implement augmentation within our training.

22 Q So in your view, just so I have it right,
23 the 1129 images before augmentation, that was the
24 learning base that you were working with; is that
25 right? 11:15

1 MR. BLYTHE: Objection to form.

2 You can answer.

3 THE WITNESS: In my view, the most accurate
4 representation of the size of the learning base that
5 I was working with would be 1129 images. 11:15

6 BY MR. ARGENTI:

7 Q And then after applying transformation
8 augmentations, you then used those images to train
9 the neural network that you used in this research,
10 right? 11:16

11 A The augmented images were what --

12 The -- the combination of the original
13 images and the augmented images --

14 Let me look at this again.

15 The augmented images were used in the 11:16
16 training. I don't recall whether the original
17 nonaugmented images were also used in the training as
18 well or not.

19 Q Now, when you gave me that explanation about
20 the change in the approach to augmentation over the 11:16
21 past few years and you said at the time of your
22 research it required manual augmentation, now it can
23 be done more randomly and automatically, is that a
24 meaningful distinction in your mind in terms of
25 whether augmented images would be considered a 11:17

1 learning base?

2 MR. BLYTHE: Objection to form.

3 You can answer.

4 THE WITNESS: I bring that up because you were
5 pointing to a specific number of augmented images. 11:17

6 If you have to create a set of augmented --
7 of augmented images prior to training as physical --
8 you know, as files that exist on a disk, then you
9 have to create some number of those images, you have
10 to pick how many of them you're going to create. 11:17

11 If you do the augmentation as a processing
12 step on the fly as each image is -- is being used for
13 training, then the number of augmented images that
14 you have is no longer a really meaningful concept
15 because every time it trains on a given image, it 11:18
16 will be augmented differently. And so the number of
17 augmented images is just the number of times that it
18 sees the -- you know, that it sees the image in
19 training. That was the distinction that I was
20 drawing. 11:18

21 BY MR. ARGENTI:

22 Q I see. Thanks.

23 Why did you train the neural network in this
24 research?

25 MR. BLYTHE: Objection to form. 11:18

1 You can answer.

2 THE WITNESS: Can you clarify that question?

3 BY MR. ARGENTI:

4 Q What clarification would be helpful?

5 A You asked me why I trained the neural 11:19
6 network in this research. What -- what are you
7 proposing as the alternative to that?

8 Q Would it be --

9 Would it have been possible to use a neural
10 network for the analysis in your research without 11:19
11 training it?

12 A It would be computationally possible to feed
13 input data into an untrained network and you would
14 get an output but you would expect that that output
15 would be essentially random and would not have any 11:19
16 utility.

17 Q So to have practical utility, it's necessary
18 to train a neural network before it can be used for
19 an image analysis; would you agree?

20 MR. BLYTHE: Objection to form. 11:20

21 You can answer.

22 THE WITNESS: So an untrained network will not
23 produce a useful result.

24 MR. ARGENTI: We've been going a little over an
25 hour. Would you -- 11:20

1 Is this a good time for a break, Dr. Mongan?

2 THE WITNESS: This would be a good time.

3 Yes. Thank you.

4 MR. ARGENTI: Okay. Off the record.

5 (Off the record.) 11:20

6 THE REPORTER: Back on.

7 BY MR. ARGENTI:

8 Q Dr. Mongan, I'm going to continue asking a

9 few questions about your paper where you're a

10 coauthor, it's titled "High-Throughput Classification 11:31

11 of Radiographics Using Deep Convolutional Neural

12 Networks."

13 Can we turn back to the first page of this

14 paper?

15 In the second paragraph under the heading 11:31

16 "Background," do you see where it says

17 "Computer vision underwent a revolution in 2012, when

18 deep learning approaches that harnessed convolutional

19 neural networks halved the error rates in

20 standardized image classification challenges compared 11:32

21 to other best competitors"?

22 A Yes, I see that sentence.

23 Q What did you co- --

24 What did you and your coauthors mean when

25 you referred to a "revolution" in computer vision in 11:32

1 2012?

2 A We were referring to a large and stepwise
3 improvement in performance on the ImageNet
4 classification challenge.

5 Q At the end of that sentence you specifically 11:32
6 cite two papers, correct?

7 A I see two citations there, yes.

8 Q And the first citation, note 5, is to a
9 paper by Lecun, L-E-C-U-N, and others, right?

10 A Yes. 11:33

11 Q And the second citation, note 6, is to a
12 paper by Krizhevsky, K-R-I-Z-H-E-V-S-K-Y, and others,
13 correct?

14 A Yes.

15 Q Is that Krizhevsky paper one that describes 11:33
16 AlexNet, A-L-E-X-N-E-T?

17 A Do you have a copy of that paper so I can
18 confirm that?

19 Q I do not but I believe --

20 And do you have a copy of Exhibit 1015 in 11:34
21 your materials there?

22 A No, I don't.

23 Q That's fine.

24 Are you familiar with AlexNet, A-L-E-X,
25 Imaging? 11:35

1 A I have -- I have heard of AlexNet.

2 Q What is AlexNet?

3 A So I would prefer to refer to the paper
4 describing AlexNet so that I'm not relying on my
5 memory. But to the best of my recollection, it is an 11:35
6 early deep convolutional neural network for image
7 classification.

8 Q Bear with me, Dr. Mongan, and I will attempt
9 to upload the exhibit I was just referring to.

10 A Sure. 11:36

11 Q I know it's going very slow.

12 Oh, there we go. It should be uploaded and
13 available to you now, Dr. Mongan.

14 A Thank you. Let me check.

15 Okay. I see Exhibit 1035, Krizhevsky. 11:37

16 Q And just to clarify for the record, this is
17 not Exhibit 1035, this is Exhibit 1015 that has
18 already been submitted in this IPR, which is the
19 label that is on the record, and I believe I uploaded
20 it as an unstamped copy so it bears Align - 11:38
21 Exhibit 1015, which is the IPR exhibit number.
22 That's the number that we'll use to refer to it,
23 okay?

24 A Thank you. I see "Align - Exhibit 1015" at
25 the bottom of the first page. 11:38

1 Q Great.

2 Is this the paper that is cited in your
3 paper at note 6?

4 A The papers have the same title. My citation
5 is -- it looks like it has a citation to a journal, 11:39
6 Advanced Neural Information Processing Systems or
7 something to that effect. I don't see any such
8 markings on this document; so I don't know if this is
9 exactly the same version of the manuscript that we
10 were citing. But it at least appears to have the 11:39
11 same title and the same authors.

12 Q Okay. And reviewing this Exhibit 1015, does
13 that refresh your recollection as to what AlexNet is?

14 Actually, strike that, let me ask that
15 question a different way. 11:40

16 Does this reviewing this Exhibit 1015
17 confirm your recollection that AlexNet is an early
18 deep convolutional neural network for image
19 classification?

20 A Can you point to me where in this document 11:40
21 it says "AlexNet"?

22 Q I'm not sure it does use that term,
23 Dr. Mongan, although I will note that it -- "Alex" is
24 the first name of the Krizhevsky author.

25 A So I -- 11:41

1 Q Is it your understanding that this paper
2 describes an early convolutional neural network for
3 image analysis?

4 A So this is a paper that I haven't looked at
5 recently. Let me take a minute to review at least 11:41
6 the abstract here.

7 So the abstract describes what they did as a
8 deep convolutional neural network and it describes
9 that this work was the winning entrant in the
10 ILSVRC-2012 competition; so on the basis of that, I 11:42
11 would understand this to be an early deep
12 convolutional neural network.

13 Q Did you review this paper, Exhibit 1015, in
14 preparing either one of your declarations in this
15 case? 11:43

16 A This is a paper that looks familiar to me
17 and I believe I have read or reviewed at some point
18 in the past. I don't recall specifically reviewing
19 it for the purposes of preparing my declarations in
20 this case. 11:43

21 Q So even though in your declaration you say
22 that you cited the exhibits cited in Dr. Foroosh's
23 declaration, there may be some that you didn't
24 review; is that right?

25 MR. BLYTHE: Objection to form. 11:43

1 You can answer.

2 THE WITNESS: So I reviewed the exhibits and
3 references that were relevant in responding to
4 Dr. Foroosh's declaration in combination.

5 BY MR. ARGENTI: 11:44

6 Q How did you know if a reference that he
7 cited was relevant or not if you didn't review it?

8 MR. BLYTHE: Objection to form.

9 You can answer.

10 MR. ARGENTI: Counsel, every time you instruct 11:44
11 him that he can answer it's in violation of the
12 rules.

13 MR. BLYTHE: My apologies.

14 I'm doing that to make it clear to the
15 witness that I'm not instructing him not to answer, 11:44
16 but if you'd prefer that --

17 MR. ARGENTI: I think we can maybe just
18 stipulate that he can answer all the questions, and,
19 in fact, under the rules should answer all the
20 questions, and that there's only a limited subset in 11:44
21 which you are permitted to instruct him not to
22 answer.

23 MR. BLYTHE: I don't think there's a problem
24 with what I've been doing, but I have no problem just
25 saying "Objection to form" going forward. 11:44

1 THE WITNESS: Could you repeat your question,
2 sir?

3 BY MR. ARGENTI:

4 Q How did you know if a reference cited in
5 Dr. Foroosh's declaration was relevant or not if you 11:45
6 didn't review it?

7 MR. BLYTHE: Objection to form.

8 THE WITNESS: I made that determination based on
9 how the reference was used in his declaration and my
10 understanding of the field from my experience in the 11:45
11 field.

12 BY MR. ARGENTI:

13 Q Were you aware of the AlexNet neural network
14 at the time you coauthored your 2016 paper that we
15 looked at earlier? 11:45

16 A I can't recall the date at which I became
17 aware of AlexNet.

18 Q But you were aware of the neural network
19 described in Exhibit 2015 -- I'm sorry, 1015 at the
20 time that you coauthored your own paper in 2016, 11:46
21 right?

22 MR. BLYTHE: Objection to form.

23 THE WITNESS: Sorry. Can you restate that,
24 please?

25 BY MR. ARGENTI: 11:46

1 Q Were you aware of the neural network
2 described in Exhibit 1015 at the time that you
3 coauthored your own paper in 2016?

4 A Yes.

5 Q How did you and your team decide to work 11:46
6 with the GoogLeNet neural network for your research
7 as opposed to something like the neural network
8 described in Exhibit 1015?

9 A I -- I don't recall the details of those
10 research design decisions from eight years ago. 11:47

11 We were working with the DIGITS framework as
12 described in the paper. I believe that we chose the
13 model that we thought would provide the best results
14 from amongst those that were available within the
15 DIGITS framework. We may have tested more than one 11:47
16 model, I don't recall.

17 Q What is the "DIGITS framework"?

18 A So you'll see at the bottom of page 96 and
19 the top of page 97 it refers to the NVIDIA Deep
20 Learning GPU Training System (DIGITS) DevBox 11:48
21 (Version 3).

22 Q And when you just said that you -- I think
23 you chose the model that your team thought would
24 provide the best results from amongst those that were
25 available within the DIGITS framework, what were some 11:48

1 of the factors that you considered in making that
2 determination?

3 A I really can't recall the details of that.
4 It's been quite some time.

5 Q I want to go back to paragraphs 20 and 21 of 11:49
6 your declaration where you talk about materials and
7 information you considered when forming your opinions
8 here, I believe. And we talked about how you -- you
9 say that you considered the petition, Dr. Foroosh's
10 declaration and the exhibits cited therein. 11:50

11 And then you also talk about that you
12 considered materials that you identified in your
13 declaration; so those would be the exhibits cited in
14 your declaration. And those filed by petitioner and
15 patent owner in this proceeding. 11:50

16 Do you recall earlier I asked you some
17 questions about the documents that you reviewed in
18 preparation for this deposition?

19 MR. BLYTHE: Objection to form.

20 THE WITNESS: Yes, I recall you asked me 11:51
21 questions about documents that I reviewed.

22 BY MR. ARGENTI:

23 Q And in particular, I asked you about some of
24 the individual prior art references at issue in this
25 IPR and whether you had reviewed those and 11:51

1 Dental Monitoring's counsel instructed you not to
2 answer.

3 Do you remember that?

4 A Yes, I recall that.

5 Q So I have a somewhat different but related 11:51
6 question now which is in preparing for this
7 deposition, did you review any documents that aren't
8 within the scope of what you refer to in
9 paragraphs 20 and 21 of your declaration?

10 MR. BLYTHE: And, Dr. Mongan, I'm going to 11:51
11 instruct you not to go into that to the extent it
12 goes into the discussions that you had with counsel
13 in preparing for this deposition. If you can answer
14 that outside the substance of that, which is
15 protected by work product, you can do so. 11:51

16 THE WITNESS: The documents that I independently
17 reviewed in preparing for this deposition were my
18 declaration and the 409 Patent, which I believe
19 either are the documents that I'm looking at here or
20 falls within the scope of materials considered. 11:52

21 I've been instructed by counsel not to
22 respond to parts of the question that would involve
23 documents that I may or may not have reviewed in
24 collaboration with counsel.

25 BY MR. ARGENTI: 11:52

1 Q That's fine, and I understand that's the
2 instruction, I just need to get it out for the
3 record; so thank you.

4 One -- one more question on that point just
5 to -- just to make sure that we're clear. 11:53

6 Dr. Mongan, you are declining to answer my
7 question whether you have reviewed any materials in
8 preparation for this deposition that aren't cited or
9 mentioned in your declaration; is that right?

10	MR. BLYTHE: Hang on.	11:53
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11 So, Dr. Mongan, to the extent you can answer
12 that question without going into the substance of
13 communications with counsel, either during our, you
14 know, discussions with counsel during this deposition
15 or advice regarding how to answer these questions or 11:53
16 during other communications with counsel, you can
17 answer that to the extent you have an answer.

18 THE WITNESS: Can I take a short break here to
19 confer with Mr. Blythe on this issue of privilege?

20 MR. ARGENTI: If you think it's necessary in 11:54

21 order to answer my question --

22 MR. BLYTHE: We will take that break if you're
23 requesting it; so, yes, let's go off the record.

24	(Off the record.)
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25 MR. BLYTHE: We're ready to continue, 11:56

1 Mr. Argenti.

2 Could you repeat your question, please?

3 BY MR. ARGENTI:

4 Q Sure.

5 The question that was pending is, 11:56

6 Dr. Mongan, is it right that you are declining to

7 answer my question regarding whether you have

8 reviewed any materials in preparation for this

9 deposition that aren't cited or mentioned in your

10 declaration? 11:56

11 MR. BLYTHE: Same instruction, Dr. Mongan,

12 regarding not going into the substance of

13 communications with counsel.

14 THE WITNESS: So I'm responding with respect to

15 the documents that I independently reviewed which 11:57

16 I've enumerated for you. And I can't otherwise

17 answer the question without going into the substance

18 of communications that I had with counsel.

19 MR. BLYTHE: And, Mr. Argenti, for the record,

20 what is your basis -- 11:57

21 Is it Align's position that communications

22 with expert witnesses in this proceeding or these IPR

23 proceedings are somehow discoverable or not otherwise

24 protected by work product protection?

25 MR. ARGENTI: I'm not asking him about 11:57

1 communications in these questions that you're
2 instructing him not to answer. My questions are
3 about the basic foundational issue of what materials
4 Dr. Mongan reviewed in preparation for this
5 deposition. 11:57

6 He's refused to answer whether he reviewed
7 the prior art references at issue. He's refused to
8 answer whether he reviewed any materials that aren't
9 cited in his declaration.

10 This is a completely improper instruction 11:58
11 not to -- instruction to him not to answer these
12 questions and we're going to reserve the right for
13 appropriate motions, including a motion to strike all
14 or a portion of his testimony, and a motion for
15 sanctions. 11:58

16 MR. BLYTHE: To clarify your -- you misstated
17 the record.

18 He has not refused to answer whether he has
19 reviewed any materials that aren't cited in his
20 declaration. He has refused to go into the substance 11:58
21 of communications with counsel regarding his
22 preparation for this deposition.

23 You have asked him and he has answered
24 regarding what documents and materials he considered
25 in forming the opinions in his report, and you're 11:58

1 entitled to continue asking him questions about that
2 subject to our objections. You are not entitled, and
3 I have not heard a basis for getting to the substance
4 of communications with counsel, including in
5 preparing for this deposition or otherwise. 11:58

6 BY MR. ARGENTI:

7 Q Dr. Mongan, in preparing for this deposition
8 did you review any materials that are not cited or
9 referred to in your declaration?

10 MR. BLYTHE: And, Dr. Mongan, the same 11:59
11 instruction; you can answer that to the extent you do
12 not reveal the contents of communications with
13 counsel.

14 THE WITNESS: Mr. Argenti, I believe this is the
15 same question you've asked me now a couple of times. 11:59

16 I've described to you the documents that I
17 reviewed independently. And other documents that I
18 reviewed as part of my meetings with Mr. Blythe in
19 preparation for this deposition, I've been instructed
20 not to answer to that. 11:59

21 MR. ARGENTI: That's fine. I just had to ask
22 the question again since Dental Monitoring's counsel
23 said that I hadn't asked it; so I think we're now on
24 the same page now that I've asked the question that's
25 been asked and that you've been instructed not to 12:00

1 answer.

2 Q Let's turn to page 95 of your declaration,
3 please, Dr. Mongan.

4 A I'm there.

5 Q On this page, and in particular starting at 12:00
6 paragraph 154 you discuss your understanding of the
7 term "real time" in claim 14 of the 409 Patent,
8 correct?

9 A Yes.

10 Q And you say, in paragraph 154, that 12:00
11 "A POSA would have understood that the term 'real
12 time' means that the analysis in checking occur
13 'immediately,' while the image" -- "image acquisition
14 process is still underway," right?

15 A That's what it says here, yes. 12:00

16 Q What do you mean by "immediately" in that
17 sentence?

18 A I'm reviewing the specification of the
19 409 Patent because I believe it speaks to that and I
20 believe that's where "immediately" came from. 12:01

21 Q If it helps, you do cite the specification
22 in paragraph 155 of your declaration.

23 A So I believe your question was what does
24 "immediately" mean here?

25 Q Right. 12:02

1 A So "immediately" is somewhat
2 context-dependent, but it means soon enough to be
3 part of the acquisition process and for the analysis
4 and feedback that is provided to be useful in the
5 context of that acquisition process. 12:03

6 Q So you're not putting a particular time
7 duration limitation on that; is that right?

8 A I'm not generally establishing any specific
9 time duration to --

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10         The approximate time duration would be          12:03
11     somewhat context-dependent.
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12 Q Let's turn to page 106 of your declaration,
13 please.

14	A Yes.
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15 Q And in this section you're talking about the 12:03
16 Salah prior art.

17 If we look at paragraph 176, you say that
18 Salah discloses a particular automatic alignment
19 method that uses registration marks.

20 | Do you see that? 12:04

21 A Yes, I see that.

22 Q And then in the next paragraph, 177, you go
23 on to opine that Salah's registration marks are
24 placed on retractors, right?

25	A Yes.	12:04
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1 Q Let's pull out the Salah exhibit. And, in
2 particular, let's take a look at the translation
3 exhibit that's been submitted as Exhibit 1008.

4 A Yes.

5 Q Is this the exhibit that you're referring to 12:04
6 when you discuss Salah in your declaration?

7 MR. BLYTHE: Sorry, Counsel, to clarify, this is
8 the document that says "Align - Exhibit 1008" at the
9 bottom of the first page?

10 MR. ARGENTI: Right. Correct. 12:05

11 THE WITNESS: Yes, I believe it is.

12 BY MR. ARGENTI:

13 Q Did you read this document in its entirety
14 when forming your opinions in this case?

15 A Yes, I did. 12:05

16 Q If you could turn to page 19 of Exhibit
17 1008, it has a list of figures and do you see where
18 it says "figure 7 schematically illustrates the
19 relevant position of registration marks 12 on updated
20 images 14 and 14 sub 2" of a retractor pen? 12:06

21 A Yes, I see that.

22 Q If we turn to Figure 7, the figures are at
23 the end of this document --

24 Let me know when you're there.

25 A Uh-huh. 12:06

1 Okay.

2 Q Looking at Figure 7 of Salah, which element
3 or elements in this figure are the registration
4 marks?

5 A So the registration marks are indicated as 12:07
6 registration marks 12. And I see that a portion of
7 Figure 5A is labeled as 12.

8 The printout that I have of this is not of
9 sufficient quality for me to visualize what is being
10 pointed at as 12. 12:08

11 Do you have an electronic copy of this with
12 color figures or some other better rendering of
13 the -- the figure that I might look at for 5A to --
14 to better see what is indicated as 12?

15 Q So, no, this is the exhibit that we have to 12:08
16 live with.

17 And we'll get to 5A; I plan on asking you
18 about 5A but first I was asking about Figure 7.

19 A I understand.

20 Q What's your understanding of what the 12:08
21 registration marks are in Figure 7?

22 A And -- and I understand that you're asking
23 me about Figure 7.

24 Since Figure 7 is referring to something
25 that is also indicated in Figure 12, to confidently 12:09

1 answer that question, I would like to have a better
2 version or visualization of Figure 5A so that I can
3 correlate what is labeled as the registration marks
4 with what I'm seeing in Figure 7.

5 Q Got it. Got it. 12:09

6 So, yeah. I think you mentioned Figure 12
7 in that answer, you said Figure 7 is referring to --
8 that is also indicated in Figure 12.

9 A Sorry. I think it's actually Figure 5A that
10 has a portion of it labeled as 12. 12:09

11 Q Right.

12 So is it your understanding then that the
13 element labeled 12 in Figure 5A is referring to a
14 registration mark?

15 A Yes, I believe that to be the case. 12:09

16 Q And then the element 10 in Figure 5A would
17 be a retractor since that description in
18 Figure 7 that we saw used element 10 to refer to a
19 retractor; is that right?

20 MR. BLYTHE: Objection to form. 12:10

21 THE WITNESS: So I see in the caption that you
22 directed me to on page 19 that it refers to a
23 retractor labeled 10. And I see in Figure 5A that
24 there is a portion of that figure that is labeled
25 with a 10. 12:10

1 BY MR. ARGENTI:

2 Q And I think we've already covered this but
3 just to be clear, are you able to tell me how many
4 registration marks are shown in Figure 5A?

5 A I see a region of the image that has a line 12:11
6 extending from it towards a label of 12, but I can't
7 see that region of the image clearly enough to
8 determine how many marks there may be there.

9 Q Is the retractor in Figure 5A a one-part
10 retractor or a two-part retractor? 12:11

11 MR. BLYTHE: Objection to form.

12 THE WITNESS: I'm not sure I can tell with
13 certainty from this image.

14 BY MR. ARGENTI:

15 Q Looking below Figure 5A, do you see 12:12
16 Figure 5C on the same page?

17 A I do see Figure 5C.

18 Q Figure 5C also depicts a retractor, right?

19 A Figure 5C depicts the lips being held back
20 by some apparatus that I think could be reasonably 12:12
21 described as a retractor.

22 Q And it looks like that apparatus in
23 Figure 5C is different than the retractor in
24 Figure 5A, correct?

25 A They do not appear identical to me. 12:12

1 Q For example, it looks like they have a
2 different shape, the retractor in Figure 5A has close
3 to right angle corners at its edges whereas the
4 apparatus in 5C lacks those corners; do you agree?

5 MR. BLYTHE: Objection to form. 12:13

6 THE WITNESS: So there are things that I see in
7 Figure 5A and I see some corners that I do not see in
8 5C; whether that represents a completely different
9 device or different elements of the same device being
10 present, I don't know. 12:14

11 BY MR. ARGENTI:

12 Q Figure 5C doesn't have any labeling
13 identifying a registration mark, right?

14	A I don't see any labeling on Figure 5C other	
15	than "Figure 5C."	12:14

16 Q Can you tell if the apparatus in Figure 5C
17 has any registration marks?

18 A I -- I can't tell. It has similar image
19 quality to Figure 5A where there's a portion that's
20 labeled as registration marks that I'm not really 12:14
21 able to see; so I don't think the image quality here
22 would be sufficient for me to determine whether or
23 not there are registration marks in 5C.

24 Q If we look back at Figure 5A, based on the
25 location of that identification of element 12, in 12:14

1 order to include the registration mark in the image,
2 the photo needs to capture the outer edges of the
3 retractor, right?

4 A I'm not sure if that's precisely true. I
5 think that the image would need to capture the 12:15
6 registration marks. It might be possible to capture
7 the registration marks without capturing the outer
8 edges of the retractor.

9 Q So if the retractor had registration marks
10 at its four corners, the camera would need to include 12:15
11 those four corners in the frame of the image, right?

12 A I think that in order to use the
13 registration marks --

14 I'm sorry, there's some lint on my track pad
15 and I accidentally turned off the video for a second. 12:15

16 I think that in order to use the
17 registration marks in processing -- in order to use
18 the registration marks, the registration marks would
19 have to be included in the frame of what was being
20 processed. 12:16

21 Q Let's turn back to your declaration,
22 Exhibit 2028, and let's go to paragraph 179, which
23 starts on page 107.

24 A Yes.

25 Q And in the first sentence of that paragraph 12:16

1 179 you say that "Salah teaches away from measuring
2 the patient's teeth to evaluate alignment during the
3 image acquisition process," correct?

4 MR. BLYTHE: Objection to form.

5 THE WITNESS: So it says here "Salah expressly 12:16
6 teaches away from measuring the patient's teeth to
7 evaluate alignment during the image acquisition
8 process."

9 BY MR. ARGENTI:

10 Q And the issue you're addressing in that 12:17
11 paragraph relates specifically about how to align an
12 image, correct?

13 MR. BLYTHE: Objection to form.

14 THE WITNESS: So the issue that I'm discussing
15 here relates to how to position the acquisition 12:17
16 apparatus with respect to the patient during
17 acquisition.

18 BY MR. ARGENTI:

19 Q What part of Salah are you referring to
20 there when you say it "teaches away"? 12:17

21 A Give me a moment to find this, please.

22 So I'm referring to Salah, page 31,
23 beginning at line 26, where it says "Preferably, no
24 measurements are taken on the teeth to bring the
25 acquisition apparatus into the matching position." 12:19

1 Q Looking at that line that you just read,
2 Salah is talking about getting the camera in the
3 correct position to take the image, correct?

4 MR. BLYTHE: Objection to form.

5 THE WITNESS: Give me just a minute to review 12:20
6 the context around that line so I can appropriately
7 answer that question.

8 Can you repeat your question, sir?

9 BY MR. ARGENTI:

10 Q Sure. 12:21

11 Looking at that line that you just read,
12 Salah is talking about the getting the cameras in the
13 correct position to take the image, correct?

14 MR. BLYTHE: Same objection.

15 THE WITNESS: So I believe Salah is talking 12:21
16 about bringing the acquisition device, the
17 acquisition apparatus, into the specified position.

18 BY MR. ARGENTI:

19 Q That's an alignment issue, right?

20 A Can you clarify what you mean by "alignment 12:21
21 issue"?

22 Q Aligning the image acquisition device with
23 the subject to be photographed.

24 A I don't think I would phrase it that way.

25 Q Why not? 12:22

1 A I don't feel like the word "alignment"
2 captures accurate -- is -- is the word that I would
3 use to describe the process here.

4 Q What's the distinction you would make
5 between "alignment" and the process that's described? 12:22

6 A So I believe that this is a positioning,
7 which is moving the acquisition apparatus into a
8 location in space relative to -- moving the
9 acquisition apparatus into an appropriate location in
10 space and I don't believe "alignment" fully captures 12:23
11 that.

12 Q When Salah says that "Preferably, no
13 measurements are taken on the teeth" in that
14 sentence, it makes no mention of assessing image
15 quality, does it? 12:23

16 A I believe that this sentence refers to
17 bringing the acquisition apparatus into a "matching
18 position."

19 Q So Salah isn't talking in that sentence
20 about determining whether the image that's captured 12:24
21 is too blurry, right?

22 A I don't see any reference to "blurry image"
23 in this one sentence that I've identified for you.

24 Q Salah also isn't talking about whether the
25 teeth are obscured in the image, right? 12:24

1 MR. BLYTHE: Objection to form.

2 THE WITNESS: So Salah makes no explicit mention
3 in this sentence of whether or not teeth are
4 obscured. But given a defined position of the
5 acquisition apparatus relative to retractors in a 12:25
6 patient mouth, I believe that would provide indirect
7 information about what teeth would and would not be
8 obscured; so I think that there may be some
9 implicit -- there may -- I believe there's something
10 implicit here about whether teeth are obscured. 12:25

11 BY MR. ARGENTI:

12 Q Is that something that you've discussed with
13 a dental professional?

14 A I've discussed with Dr. Kusnoto that in
15 different orientations of an acquisition device, some 12:25
16 teeth are visible and some teeth are obscured.

17 Q Are there -- are there ways that teeth in an
18 image could be obscured by virtue of something other
19 than orientation?

20 MR. BLYTHE: Objection to form. 12:26

21 THE WITNESS: So clearly there are ways that
22 things could be obscured; if, for instance, someone
23 stuck their hand in front of the patient's mouth, but
24 I'm not sure whether those are reasonable scenarios
25 such that they're orthodontically relevant. 12:26

1 BY MR. ARGENTI:

2 Q That's not what Salah is talking about in
3 this sentence at least, right?

4 A Can you clarify that question?

5 Q You just said there are ways in which 12:26
6 "things could be obscured, for example, if someone
7 stuck their hand in front of the patient's mouth,"
8 but you're not sure that they're orthodontically
9 relevant.

10 And I'm saying it's also not what Salah is 12:27
11 talking about in that sentence, correct?

12 MR. BLYTHE: Objection to form.

13 THE WITNESS: Salah --

14 I don't believe that Salah is talking about
15 someone sticking their hand in front of their mouth 12:27
16 or a patient's mouth in this sentence.

17 BY MR. ARGENTI:

18 Q What's the basis of your understanding that
19 the image being obscured by a hand or some object is
20 not orthodontically relevant? 12:27

21 A No. I said that I didn't know. That --
22 that's a question that I think goes to orthodontic
23 expertise.

24 Q Did you talk with Dr. Kusnoto about types of
25 ways that images could be obscured and whether or not 12:28

1 they would be orthodontically relevant?

2 A I did not talk with him about the likelihood
3 of hands or other objects being inserted between an
4 acquisition device and the teeth and potentially
5 obscuring. That wasn't a scenario we considered. 12:28

6 Q What scenarios regarding the image being
7 obscured did you consider with Dr. Kusnoto?

8 A We talked about different standard
9 orthodontic photos that -- the standard clinical set
10 of orthodontic photos and we talked about the 12:28
11 visibility of teeth in those -- in those standard
12 photos which are taken from different spatial
13 orientations.

14 Q But did you specifically talk about ways in
15 which those images might be obscured? 12:29

16 A By things other than teeth, is that what
17 you're asking me?

18 We talked about ways in which those images
19 might be obscured by teeth. And -- let me -- let me
20 rephrase that question -- that answer, please. 12:29

21 We talked about how, in those standard
22 views, some teeth would be obscured by other teeth
23 and by the structures of the mouth and face.

24 Q And did you discuss which of those ways of
25 obscuring the teeth that you're trying to capture 12:30

1 would be orthodontically relevant and which wouldn't?

2 MR. BLYTHE: Objection. Form.

3 THE WITNESS: I'm not sure if I understand that
4 question. Can you -- can you clarify that question
5 for me? 12:30

6 BY MR. ARGENTI:

7 Q You said you discussed with Dr. Kusnoto how,
8 in those standard views --

9 A Uh-huh.

10 Q -- some teeth would be obscured by other 12:31
11 teeth and by the structures of the mouth and face.

12 And I'm asking did you discuss whether some
13 of those ways of obscuring the image would be
14 orthodontically relevant and some others might not
15 be? 12:31

16 A I don't think that in the context of that
17 discussion that I had with Dr. Kusnoto that
18 orthodontic relevance, as you phrased it, was -- was
19 a concept that was explicitly considered.

20 What I understood from Dr. Kusnoto was that 12:32
21 the reason that there is multiple photographs in a
22 standard set of photographs was because, in general,
23 you can't see all aspects of all teeth from a single
24 image. It's a multiple image that --

25 Q I think I'm starting to understand it. 12:32

1 So you need to take it from different
2 angles, different views, to capture all the teeth; is
3 that right?

4 A So I understood from Dr. Kusnoto that there
5 was a standard set of orthodontic photos and that 12:32
6 those are acquired from different standard locations
7 relative to the patient's mouth to permit a full
8 evaluation of the teeth.

9 Q So it's your understanding from talking to
10 Dr. Kusnoto that in any particular image of the teeth 12:32
11 you're going to expect that some of the teeth are
12 going to be obscured in the image, either because
13 they're behind the teeth at the front of the view or
14 they're on the other jaw, so you're talking about
15 some obstructions that are expected in the standard 12:33
16 orthopedic -- orthodontic image capture; is that
17 right?

18 MR. BLYTHE: Objection.

19 THE WITNESS: It was my understanding that -- it
20 was my understanding that it's common for a standard 12:33
21 orthodontic photo to not represent all of the teeth
22 in the mouth, for a single photo to not represent all
23 the teeth in the mouth.

24 BY MR. ARGENTI:

25 Q Okay. And so to the extent -- 12:33

1 If we go back to that sentence of Salah
2 talking about not taking measurements, to the extent
3 that there are obstructions in play in what Salah is
4 talking about, they would be expected obstructions by
5 virtue of the particular view that's being captured; 12:33
6 is that right?

7 MR. BLYTHE: Objection to form.

8 THE WITNESS: Give me just a minute to think
9 about that.

10 Can you repeat the question for me, please? 12:34

11 BY MR. ARGENTI:

12 Q Right.

13 So if we look back at that sentence that you
14 had cited in Salah regarding not taking measurements
15 of the teeth and we look at the issue that Salah is 12:34
16 raising, to the extent that that issue involves
17 obstructions of the teeth they would be the expected
18 obstructions and -- which is the reason that you need
19 to take multiple views of the teeth; is that right?

20 MR. BLYTHE: Objection to form. 12:34

21 THE WITNESS: So to the extent --

22 Looking at this sentence on lines 26 and 27
23 at page 31, to the extent that -- that bringing the
24 acquisition apparatus into a matching position
25 implicitly describes teeth being obstructed, it would 12:35

1 be the expected obstructions by other teeth and
2 structures of the mouth that is potentially -- that
3 is implicitly described by bringing the acquisition
4 apparatus into the matching position.

5 BY MR. ARGENTI: 12:35

6 Q And beyond the expected obstructions for any
7 particular view angle that you're taking an image at,
8 there could also be unexpected obstructions where
9 something like a hand obscures the entire image to be
10 captured, right? 12:35

11 MR. BLYTHE: Objection to form.

12 THE WITNESS: So that's, I think, the question
13 that you asked me several minutes ago and you phrased
14 it as could it happen. And it's certainly -- I think
15 it's -- from common sense, it's possible that that 12:36
16 could happen but whether or not it's likely enough
17 that that would happen, that it's worthy of
18 consideration, I think that that's a question that
19 goes to orthodontic expertise.

20 I don't -- I have -- I don't have personal 12:36
21 experience or expertise in taking these photos and so
22 I don't know whether that's something that is
23 conceivable but essentially never happens and is not
24 worthy of, you know, consideration. Or whether it's
25 something that is a -- you know, a likely 12:36

1 possibility.

2 BY MR. ARGENTI:

3 Q Let's turn to paragraph 79 of your
4 declaration, please, on page 41.

5 A I am at paragraph 79. 12:37

6 Q Okay. And do you see in the second-to-last
7 sentence where it starts "A POSA would have
8 recognized that"?

9 A I see that section.

10 Q Could you read that sentence for me, please? 12:37

11 A "A POSA would have recognized that, in the
12 context of the method in Salah, in which the
13 patient's individual teeth are expected to move and
14 may be in an unknown position relative to each other
15 when the 'updated image' is acquired, a patient's 12:38
16 teeth could not be reliably used as 'registration
17 marks' for aligning the acquisition apparatus so as
18 to capture an 'updated image' according to such
19 target acquisition conditions."

20 Q You don't mention Dr. Kusnoto in this -- in 12:38
21 this sentence, do you?

22 A Dr. Kusnoto's name does not appear in this
23 sentence but I believe that elsewhere in my
24 declaration --

25 Give me a moment, please, to refer to my 12:38

1 declaration.

2 So at the bottom of page 39, the declaration
3 reads "I understand from Dr. Kusnoto that, during
4 orthodontic treatment, the patient's teeth may be
5 moved several millimeters." 12:39

6 Q What's the basis for your understanding in
7 paragraph 79 that the patient's individual teeth in
8 Salah "may be in an unknown position relative to each
9 other before an 'updated image' is acquired"?

10 A The basis for -- the basis for me saying 12:40
11 that the patient's individual -- the patient's teeth
12 may be in an unknown position is that they are
13 expected to move.

14 Q So it's your understanding that that
15 movement would be unexpected or unknown? 12:40

16 MR. BLYTHE: Objection to form.

17 THE WITNESS: It's my understanding from my
18 discussions with Dr. Kusnoto that the purpose of the
19 orthodontic treatment is to move the teeth. It's
20 further my understanding from Dr. Kusnoto that the 12:41
21 teeth do not always move exactly according to plan or
22 at a fully predictable rate and that's --

23 My understanding is that's the reason for
24 these interim evaluations.

25 BY MR. ARGENTI: 12:41

1 Q How often does that occur?

2 A How often does what occur?

3 Q How often does it occur that the teeth do
4 not always move exactly according to plan or at a
5 fully predictable rate? 12:42

6 A I believe that's a question that goes to
7 orthodontic expertise and I wouldn't want to
8 speculate on that.

9 Q You don't state anywhere in your declaration
10 that you understand from Dr. Kusnoto that the teeth 12:42
11 do not always move exactly according to plan or at a
12 fully predictable rate, do you?

13 A I'm not aware of a sentence in my
14 declaration that uses exactly those words and
15 references Dr. Kusnoto. But my understanding of that 12:43
16 point comes from my discussions with Dr. Kusnoto.

17 Q What else in your declaration where you're
18 testifying as an expert sets forth an opinion that is
19 based on information you obtained from Dr. Kusnoto
20 but you don't identify that? 12:43

21 MR. BLYTHE: Objection to form.

22 THE WITNESS: My general understanding of the
23 dental and orthodontic context in which these
24 processes --

25 My general understanding of the orthodontic 12:44

1 and dental context is informed by my discussions with
2 Dr. Kusnoto; that where there's specific relevant
3 points that came directly from Dr. Kusnoto, I have
4 tried to highlight those with explicit indications.

5 BY MR. ARGENTI: 12:44

6 Q Right.

7 And we just identified one example where you
8 make an assertion about how the teeth would move in
9 an unexpected way and you don't identify that that
10 comes from Dr. Kusnoto, but you're telling me today 12:44
11 that it did come from Dr. Kusnoto; so I'm asking you
12 what other parts of your declaration are based on
13 information from Dr. Kusnoto as opposed to your own
14 expertise but you don't identify that.

15 MR. BLYTHE: Objection to form. 12:45

16 THE WITNESS: I'm not aware of other specific
17 points in my declaration that come from Dr. Kusnoto,
18 but if there are points of concern to you I'd be
19 happy to look at them.

20 BY MR. ARGENTI: 12:45

21 Q So you're unable to identify any others but
22 if we point them out to you you'd be happy to concede
23 that, yeah, that's actually not based on your
24 expertise?

25 MR. BLYTHE: Objection to form. 12:45

1 THE WITNESS: So, Mr. Argenti, I believe you
2 were asking me, you know, what -- what other things
3 are there and -- in the document and I'm telling you
4 that I'm not aware of other -- other points in the
5 document. 12:46

6 BY MR. ARGENTI:

7 Q Were you aware of this point in the document
8 that we just discussed until I brought it to your
9 attention?

10 MR. BLYTHE: Objection to form. 12:46

11 THE WITNESS: I was aware of this point in the
12 document. I had not recognized that this was a
13 statement based on orthodontic expertise that I
14 understood from consultation with Dr. Kusnoto and
15 that it was not explicitly referenced as such until 12:46
16 you brought it to my attention.

17 BY MR. ARGENTI:

18 Q Is it your understanding that a POSA, as of
19 2017, would not have been able to account for a tooth
20 when aligning a camera to take a dental image? 12:47

21 MR. BLYTHE: Objection to form.

22 THE WITNESS: So you're asking me whether they
23 would or would not have been able to, which I think
24 is asking me whether it's an insolvable problem. And
25 I don't think it's an insolvable problem but that -- 12:47

1 but I think really the clearer thing here is
2 motivation.

3 And I think that a POSA would choose to
4 perform the acquisition in the way that avoided as
5 many problems as possible. And I believe that having 12:48
6 to account for movement of the teeth would be an
7 additional complication, an additional source of
8 complexity and an additional potential source of
9 inaccuracy. And I believe that's why Salah says that
10 preferably you don't do that. 12:48

11 MR. ARGENTI: We are past the 12:30 point where
12 I had suggested a lunch stop; so I think it's
13 probably time for a break.

14 THE WITNESS: Okay.

15 MR. BLYTHE: Okay. Works for me if for you. 12:48

16 THE WITNESS: I'm sorry?

17 MR. BLYTHE: Works for me if for you.

18 THE WITNESS: Yeah. That sounds -- that sounds
19 good.

20 What's a good duration for lunch? 12:49

21 MR. ARGENTI: We can go off the record.

22 (Lunch recess.)

23 BY MR. ARGENTI:

24 Q Dr. Mongan, we're going to turn now to the
25 Carrier prior art. And in your declaration, your 01:31

1 analysis focuses on the Carrier Provisional reference
2 so that's what I'll focus on as well; so if you can
3 take the Carrier prior art out, that's Exhibit 1006.

4 A Okay. I have Exhibit 1006 in front of me.

5 Q Great. 01:31

6 So Carrier describes using an overlay that
7 provides an outline of teeth to line up a camera for
8 image acquisition, right?

9 A So my understanding is that one of the
10 things described in Carrier is using an overlay of 01:32
11 teeth.

12 Q Why don't we turn to page 50 of
13 Exhibit 1006.

14 A I'm sorry, can you say that again?

15 Q 50. 5-0. Page 50. 01:32

16 A Got it.

17 Q This is the page that has Figures 3A and 3B
18 on it.

19 A I see those figures.

20 Q These figures depict one type of overlay 01:32
21 that Carrier describes, right?

22 A I'd just like to look for the captions for
23 these figures.

24 So my understanding is that these figures
25 depict an overlay. 01:33

1 Q And in Figure 3A the overlay is offset below
2 the corresponding upper dental arch, correct?

3 A That's how it appears to be, yes, the
4 overlay is not well matched with the -- the teeth.

5 Q Whereas in Figure 3B the overlay and the 01:34
6 teeth have been aligned or matched, right?

7 A So the caption for Figure 3B describes this
8 as a situation where the overlay "approximately
9 matches" with the patient's teeth.

10 Q And Carrier says that the alignment of the 01:34
11 overlay and the teeth, as shown in Figure 3B, leads
12 to the system determining that the conditions are
13 right in the picture, correct?

14 A Can you direct me to where you're quoting
15 from Carrier? 01:34

16 Q Sure.

17 We can take a look at paragraph 63 on -- I
18 believe it's page 12.

19 A So I see that it says "Once the apparatus
20 (e.g. software/application software) determines that 01:35
21 the teeth are in alignment with the overlay, as shown
22 in Figure 3B, the screen may display an indicator,
23 such as, in Figure 3B, changing the color of the
24 overlay from the first color to a second color
25 (e.g., green, blue, etcetera) and/or automatically 01:35

1 taking the image."

2 Q And then it goes on in the next sentence to
3 say that that determination that they are in
4 alignment can be automatically done, right?

5 A I see that it says "the method or apparatus 01:36
6 may automatically determine alignment between the
7 overlay and the patient's teeth in a variety of
8 ways."

9 Q Do you have any opinion regarding whether a
10 dental professional would have preferred using 01:36
11 registration marks on a retractor for an on-screen
12 overlay when aligning a camera to take a picture of
13 teeth?

14 A I -- I don't have an opinion about what the
15 preference of a dental professional would be. 01:36

16 Q Did you ask Dr. Kusnoto about that?

17 A I don't recall that I did.

18 Q Do you have any opinion regarding whether a
19 dental professional would have viewed physical
20 registration marks or an on-screen overlay as 01:36
21 preferable for guiding a patient to take a picture of
22 their own teeth?

23 A Can you clarify what you -- what you mean by
24 "physical registration marks" in this context?

25 Q For example, the registration marks on a 01:37

1 retractor, a physical object.

2 MR. BLYTHE: Objection to form.

3 THE WITNESS: I -- I don't have an opinion about
4 what the preference -- what the preference of a
5 dental professional would be. 01:37

6 BY MR. ARGENTI:

7 Q Did you ask Dr. Kusnoto about that?

8 A I don't recall that I did.

9 Q In Figure 3B of the Carrier Provisional
10 which, again, is back at page -- 01:37

11 A I have it here, thank you.

12 Q Okay. And in Figure 3B of the Carrier
13 Provisional there's no retractor visible, correct?

14 A In Figure 3B I don't see anything on this
15 image that I can identify as a retractor. I do note 01:38
16 that the lips appear retracted from the teeth so it
17 may be that there is a retractor out of frame. But I
18 don't see a retractor on this image.

19 Q Let's turn to page 55 of the Carrier
20 Provisional, please. And look at Figure 7B. Okay? 01:38

21 A I'm on Figure 7B.

22 Q This is an another picture where an
23 on-screen overlay is aligned with the teeth, correct?

24 A So there is an image that demonstrates an
25 on-screen overlay and there are teeth in the image. 01:39

1 It's not clear to me that they are necessarily
2 aligned.

3 Q The patient in Figure 7B is using a
4 retractor, correct?

5 A On this image I see portions of a device 01:39
6 that appears to be retracting the lips and that would
7 match my understanding of a retractor. Whether it's
8 the patient using the retractor themselves or whether
9 there is some other person such as a dental
10 professional who's using the retractor is unclear to 01:40
11 me from this image.

12 Q In Figure 7B the camera screen is not
13 capturing the entire retractor on the image frame?

14 A It appears that there are portions of the
15 device retracting the lips that are outside the frame 01:40
16 of what's shown on the screen.

17 Q Why don't we turn to paragraph 105 of your
18 declaration, please. This paragraph is part of the
19 section which --

20 A Just give me just a second. 01:41

21 Q Okay.

22 A I'm there now.

23 Q Paragraph 105 of your declaration is part of
24 a section in which you've testified that the Carrier
25 Provisional does not disclose a method for patients 01:41

1 to use a mobile phone to capture dental images,
2 right?

3 MR. BLYTHE: Objection to form.

4 THE WITNESS: So paragraph 105 appears within a
5 section that's titled "Carrier is Limited by the 01:41
6 Disclosure of the Carrier Provisional, Which
7 Contemplates Use By Dental Professionals Not
8 Patients."

9 BY MR. ARGENTI:

10 Q And in paragraph 105, consistent with that 01:41
11 you say "In contrast, the Carrier Provisional only
12 discloses a method for dental professionals, as
13 opposed to the patient themselves, to use a mobile
14 phone to capture 'high quality dental images'," 01:42
15 right?

16 A Yes, I see that sentence in the declaration.

17 Q And then in the next paragraph, 106, you say
18 that you have "reviewed Dr. Foroosh's cited evidence"
19 that he's "'providing a mobile application on a
20 mobile device associated with a patient' limitation 01:42
21 in Element 1.1 of claim 1 of Carrier is supported by
22 the Carrier Provisional," and then you have some
23 cited portions of the Carrier Provisional, right?

24 A Yes.

25 Q One of those cited paragraphs of the Carrier 01:42

1 Provisional is paragraph 55, right?

2 A I see that at the top of page 58 there's a
3 citation that is 54 through 55, yes.

4 Q And that's part of what you reviewed when
5 considering and responding to Dr. Foroosh's opinions, 01:43
6 right?

7 A Yes.

8 Q Let's turn to paragraph 55 of the Carrier
9 Provisional, please.

10 A I'm on paragraph 55. 01:43

11 Q In the first sentence it refers to capturing
12 a patient image, right?

13 MR. BLYTHE: Objection to form.

14 THE WITNESS: In the first sentence -- the first
15 sentence ends with "to assist in placement of the 01:44
16 camera to capture the patient image."

17 BY MR. ARGENTI:

18 Q Is it your understanding that when it refers
19 to the "patient image" that's an image of the
20 patient's teeth? 01:44

21 A Yes. My understanding is that this is
22 referring to capturing an image of the patient's
23 teeth.

24 Q And then in the next sentence in
25 paragraph 55 it says that "the overlay may be 01:44

1 customized to the user's teeth."

2 Do you see that?

3 A I see that in the next sentence it refers to
4 the "user's teeth."

5 I'd also like to point out that in my review 01:45
6 of this document, I identified that the term "user"
7 is used inconsistently throughout this document.
8 It's used in some contexts where it clearly refers to
9 a doctor or dental professional; it's used in some
10 contexts where it clearly refers to a patient; and 01:45
11 it's used in some contexts where it's unclear who
12 it's referring to.

13 Q So is it your understanding that if the
14 Carrier Provisional refers to the patient as a user
15 in paragraph 55, that is negated by references 01:45
16 elsewhere in the Carrier Provisional to the user
17 being a dentist?

18 MR. BLYTHE: Objection to form.

19 THE WITNESS: It's my understanding that the
20 Carrier Provisional uses the term "user" 01:46
21 inconsistently and that there's no single consistent
22 meaning of "user" that can be reasonably applied
23 across the entire -- the entire document without
24 logical inconsistency. And so what the meaning of
25 "user" is in any particular location has to be 01:46

1 determined from context.

2 BY MR. ARGENTI:

3 Q Is it your understanding that the Carrier
4 Provisional can only disclose its user being a
5 dentist or a patient but not both? 01:46

6 A Can -- can you rephrase that for me?

7 Q Is it your understanding that the user in
8 the Carrier Provisional has to be either a dentist or
9 a patient, but that Carrier can't disclose that both
10 could be the user? 01:47

11 MR. BLYTHE: Objection to form.

12 THE WITNESS: It's my understanding that user
13 is -- the term "user" is used inconsistently
14 throughout the document and that there are some
15 instances where it means doctor or dentist exclusive 01:47
16 of patient; there are some instances where it means
17 patient exclusive of doctor or dentist in their
18 professional capacity; and there are some instances
19 where it's less clear.

20 BY MR. ARGENTI: 01:48

21 Q I guess regardless of whether a particular
22 instance of "user" is referring to a patient or a
23 dentist, is it your understanding that the user
24 throughout the Carrier Provisional is the one who is
25 taking the photograph of the teeth? 01:48

1 A It's my understanding that the person taking
2 the photograph of the teeth throughout the Carrier
3 Provisional is a dental professional, not a patient.
4 And that the term "user" is used inconsistently.

5 Q So it's your understanding that the person 01:49
6 taking the image of the teeth is not always the one
7 that Carrier refers to as the user?

8 A It's my understanding that there are places
9 where Carrier uses the term "user" in a context that
10 makes it clear that in that case it is referring to a 01:50
11 patient but the -- when the -- but that the person
12 who is taking the photograph is a dental professional
13 exclusive of patient.

14 Q What is the user in the Carrier -- Carrier
15 Provisional using if not the image acquisition 01:50
16 device?

17 MR. BLYTHE: Objection to form.

18 THE WITNESS: I'm not sure what the authors
19 intended, just why the authors used that -- that
20 term. But I note that there are places where the 01:51
21 term "user" is used in a context that makes it clear
22 that it's exclusive of patient.

23 BY MR. ARGENTI:

24 Q If we look again at paragraph 55 and that
25 second sentence that says "The overlay may be based 01:51

1 on a generic image of teeth, or it may be customized
2 to the user's teeth," what is the user in that
3 sentence a user of?

4 A I'm not sure what they're a user of.

5 Q So to reach your conclusions about what is 01:52
6 and is not disclosed in Carrier, you had to have an
7 understanding of Carrier that was uncertain about
8 what the user is?

9 MR. BLYTHE: Objection to form.

10 BY MR. ARGENTI: 01:52

11 Q Is that right?

12 A I think what -- the central issue that we're
13 addressing here is who is acquiring the image, who's
14 taking the picture. And so to have an understanding
15 of that, I had to specifically look at who is 01:53
16 described as acquiring the image, who is described as
17 taking the pictures.

18 Q In paragraph 55, if the "user" in the second
19 sentence is the user of the camera image acquisition
20 device, that means the patient is taking a picture of 01:53
21 their own teeth, right?

22 A Can you repeat that, please?

23 Q In paragraph 55, if the "user" in the second
24 sentence is a user of the image acquisition device,
25 that means the patient is taking a picture of their 01:53

1 own teeth, right?

2 MR. BLYTHE: Objection to form.

3 THE WITNESS: I'm not sure that's necessarily
4 true. I -- it --

5 One possible explanation for the 01:54
6 inconsistent use of the term "user" is that they
7 meant it to refer both to the person operating or
8 using the acquisition device in some contexts and the
9 person on whom the acquisition device is used in
10 other contexts. 01:55

11 BY MR. ARGENTI:

12 Q Can you point me to any example in the
13 Carrier Provisional where it clearly discloses that
14 second possibility that you just laid out?

15 A Where it discloses that the user is clearly 01:55
16 a patient?

17 Q Well, no. It's not about whether it's a
18 patient or a doctor, it's about whether they are
19 using the term "user" to refer to someone who the
20 device is being used on. 01:55

21 MR. BLYTHE: Objection to form.

22 THE WITNESS: I think that a POSA reading this
23 specification of the provisional here as a whole,
24 given the multiple references to doctors taking
25 pictures and to user -- the term "user" in sections 01:57

1 where it's talking about pictures being acquired,
2 photographs being acquired, being equated with dental
3 professionals.

4 And also understanding that the invention
5 that is being described and the applications of it 01:58
6 would, in many cases, be impossible for someone to
7 operate on themselves, would understand that the --
8 would understand that in contexts where the term
9 "user" refers to a patient, it may be that that term
10 was selected because that's the person on whom the 01:58
11 device is being used, but not that that person is
12 using it to acquire images of themselves.

13 BY MR. ARGENTI:

14 Q So do I have it right then, Dr. Mongan, that
15 you are unable to direct my attention to any portion 01:59
16 of the Carrier Provisional where it describes or
17 explains that it is using the term "user" to refer to
18 someone that the image acquisition device is being
19 used on rather than the person using the image
20 acquisition device? 01:59

21 A So as I've noted, the Carrier Provisional is
22 inconsistent in its use of the term "user." It, in
23 several places, such as paragraph 56, explicitly
24 defines the "user" as a dental professional; for
25 instance, it says the camera is typically held by the 01:59

1 user, e.g., dentist, orthodontist, technician. I
2 don't have an explicit section of this that describes
3 "user" as someone on whom the device is used.

4 Q Is it your understanding that in
5 paragraph 56 where it says "e.g." and gives examples, 02:00
6 that is defining the term "user"?

7 A I believe that a POSA reading this would
8 understand that parenthetical "e.g." as indicating
9 the scope of roles that are included -- the
10 indication of the scope of roles that are included in 02:00
11 the people who might be the user who the camera is
12 typically held by.

13 Q Okay. So to reach your conclusions about
14 the Carrier Provisional you had to not only interpret
15 the term "user" to mean the one that it is being used 02:01
16 on but also to interpret an e.g. list of examples to
17 be a narrowing definition limited to those examples;
18 do I have that right?

19 MR. BLYTHE: Objection to form.

20 THE WITNESS: No, I don't think that's exactly 02:01
21 what I said.

22 I said that I think that a POSA would be
23 informed by what was meant by "user" by that
24 parenthetical.

25 And in the context of multiple other 02:01

1 statements in the Carrier Provisional describing
2 doctors taking photographs, and with the
3 understanding that for many of the types of
4 photographs that are described as being obtained, it
5 would put the screen and the overlay in a position 02:02
6 where it couldn't reasonably be seen by the patient,
7 that a POSA would understand that it was a doctor
8 taking the pictures, a doctor or dental professional.
9 BY MR. ARGENTI:

10 Q So if you wrote the disclosure in the 02:02
11 Carrier Provisional regarding the doctor being the
12 one taking the picture, you are interpreting other
13 aspects of the disclosure to the contrary in a way
14 that's consistent, then; is that right?

15 A I'm sorry, I didn't understand that 02:02
16 statement.

17 Q So because there are portions of the Carrier
18 Provisional that you interpret as disclosing the
19 doctor taking the picture of the patient, you are
20 interpreting other portions of the Carrier 02:02
21 Provisional in a way that is consistent with that
22 understanding, even if those other portions don't say
23 that?

24 MR. BLYTHE: Objection to form.

25 BY MR. ARGENTI: 02:03

1 Q Is that right?

2 A I -- I -- I -- I'm still struggling a little
3 bit to understand that -- that statement.

4 Q That's okay. We can move on.

5 Let's take a look at page 97 of your 02:03
6 declaration, please.

7 A I'm on page 97.

8 Q In paragraph 159, in the first bullet point,
9 you say that "Dr. Foroosh proposes that a POSA would
10 have been motivated to train and use Maninis's 02:03
11 COB neural network to detect semantic contours (i.e.,
12 contours labeled as associated with a particular
13 object), but Maninis's COB neural network could not
14 be trained and would not perform in the proposed
15 manner." 02:04

16 Did I read that correctly?

17 A Yes, I believe you did.

18 Q Dr. Foroosh doesn't actually use the term
19 "COB neural network" when discussing Maninis, does
20 he? 02:04

21 A Can you -- can you point me to where
22 you're -- where Dr. Foroosh refers to this so that I
23 can --

24 Q Well, that would be difficult because he
25 doesn't refer to the term "COB neural network" in his 02:04

1 declaration.

2 A Certainly.

3 I believe what you said was Dr. Maninis --
4 Dr. Foroosh doesn't use the term "COB neural network"
5 when he refers to Maninis's work; so I think, in 02:04
6 order to answer that question, I need to look at
7 where he refers to Maninis's work.

8 Q I will be more broad and refer you to his
9 entire declaration --

10 A Okay. 02:05

11 Q -- and see if you will agree with me that
12 Dr. Foroosh does not use the term "COB neural
13 network" in his declaration, does he?

14 MR. BLYTHE: Objection to form.

15 THE WITNESS: So on paragraph 61 of 02:07
16 Dr. Foroosh's declaration, Exhibit 1002, it begins --

17 And I may not be pronouncing these names
18 correctly.

19 -- "Kevis-Kokitsi" -- "Kevis-Kokitsi
20 Maninis, et al., published Convolutional Oriented 02:07
21 Boundaries: From Image Segmentation to High-Level
22 Tasks"; so the Maninis article that he's referring to
23 is titled "Convolutional Oriented Boundaries."

24 Furthermore, on page 34, at the beginning of
25 paragraph 67, it says "The public availability of 02:07

1 Maninis" --

2 So "Maninis" is the term that he uses in
3 referring to this work.

4 -- "to interested persons prior to July 21,
5 2017 is also corroborated by archived web pages of 02:08
6 both the Archive.org and the authors of Maninis. As
7 of May 3, 2017, the university website featuring the
8 authors' convolutional oriented boundaries software
9 included a link"; so from this I understand that when
10 he uses the term "Maninis" he's referring to the 02:08
11 convolutional oriented boundaries or COB network
12 described in that article.

13 BY MR. ARGENTI:

14 Q But he doesn't use the term "COB neural
15 network," right? 02:08

16 A So when I use the term "COB," I use that as
17 an acronym or an abbreviation for convolutional
18 oriented boundaries.

19 Q "COB" is not the term I'm asking you about,
20 Dr. Mongan. 02:09

21 A I wasn't quite finished answering there.

22 When I use the term "COB," I'm referring --
23 I'm using that as an abbreviation for convolutional
24 oriented boundaries.

25 Dr. Foroosh refers to the software of 02:09

1 Maninis as convolutional oriented boundaries software
2 in paragraph 67.

3 And then in paragraph 68 he describes this
4 as Maninis uses a neural network trained on precisely
5 annotated images to detect contours; so while in 02:10
6 my -- in looking at this here on the spot, I don't
7 see the exact phrase "COB neural network," it's clear
8 to me that when he says "Maninis" he's talking about
9 the same thing that I'm talking about when I say
10 "Maninis's COB neural network." 02:10

11 Q Maninis itself never uses the term
12 "COB neural network," right?

13 A If you'll give me a moment, I'll look at the
14 Maninis.

15 Q Actually, let me ask a different question. 02:11
16 Where does the term "COB neural network"
17 come from, Dr. Mongan?

18 A It's a term that I use to describe the
19 network that is introduced in the Maninis paper.

20 Q So it's a term that you introduced, right? 02:11

21 MR. BLYTHE: Objection to form.

22 THE WITNESS: What do you mean by I "introduced"
23 it?

24 BY MR. ARGENTI:

25 Q Maybe we can go back now to the Maninis 02:11

1 paper.

2 Maninis doesn't use the term "COB neural
3 network," right?

4 A I'll look at the Maninis paper.

5 Can you remind me which exhibit number that 02:12
6 is?

7 Q That's 1007.

8 A Thank you.

9 So on paragraph 2 on the first page of
10 Exhibit 1007 it says "This paper proposes 02:13
11 Convolutional Oriented Boundaries (COB) a generic
12 CNN."

13 And "CNN" had previously been defined in the
14 first paragraph as "Convolutional Neural Network."

15 Q It says it's "a generic CNN architecture," 02:13
16 right?

17 MR. BLYTHE: I'm sorry, I couldn't hear that,
18 Counsel.

19 Could you please repeat that?

20 THE WITNESS: Yes. 02:13

21 BY MR. ARGENTI:

22 Q In that sentence it says that it's
23 "a generic CNN architecture," right? I think
24 Dr. Mongan split that phrase out.

25 A The next word following "CNN" is 02:13

1 "architecture," yes.

2 And then subsequently refers to

3 "Convolutional Oriented Boundaries" which is a

4 generic convolutional neural network architecture, as

5 COB; so in my declaration, just to make clear what 02:13

6 "COB" refers to, I'm referring to it as a C- -- I'm

7 referring to it as the COB neural network. I -- I

8 don't see that there's a substantive difference

9 between my phrase "COB neural network" and "COB" in

10 the Maninis manuscript. 02:14

11 Q So when you are referring to -- actually,

12 let's take a look at page 71 of your declaration,

13 paragraph 124.

14 A I'm there.

15 Q And in that first sentence it says 02:14

16 "Kevis-Kokitsi Maninis et al.'s article entitled

17 'Convolutional Oriented Boundaries: From Image

18 Segmentation to High-Level Tasks' proposes a

19 technique, which the authors refer to as

20 Convolutional Oriented Boundaries ('COB'), for 02:15

21 determining boundaries in an image using a

22 convolutional neural network ('CNN') (referred to in

23 this declaration as the Maninis 'COB neural

24 network')."

25 Did I read that right? 02:15

1 A I believe so.

2 Q So when you introduced that term "Maninis
3 COB neural network," is that the COB technique that
4 you're referring to?

5 A Are you differentiating "technique" from 02:16
6 "architecture"?

7 Q I'm trying to figure out what exactly you
8 think the "COB neural network" is.

9 Is it the technique that you refer to in
10 that sentence in paragraph 124 or is it the technique 02:16
11 when using a convolutional neural network, CNN? What
12 is the "COB neural network," this term that you
13 introduce?

14 A The term --

15 When I use the term "COB neural network," I 02:17
16 am referring to what is referred to as "COB" in the
17 Maninis manuscript.

18 Q So the COB is the generic CNN architecture;
19 is that right?

20 MR. BLYTHE: Objection to form. 02:17

21 THE WITNESS: So I'm referring --

22 I'm using a term that I consider to be
23 equivalent to the term "COB" used in the Maninis
24 manuscript. And in the second paragraph, the
25 manuscript states that this "paper proposes 02:17

1 Convolutional Oriented Boundaries (COB), a generic
2 CNN architecture."

3 BY MR. ARGENTI:

4 Q And so when you refer to a "COB neural
5 network," that's what you're referring to, 02:18
6 "Convolutional Oriented Boundaries, a generic
7 CNN architecture"; is that right?

8 A I'm referring to the same concept identified
9 as COB in the Maninis manuscript.

10 Q And I'm trying to figure out exactly what 02:18
11 that is.

12 That sentence in Maninis in the second
13 paragraph under the "Introduction" goes on to say
14 that "we show how it translates top performing base
15 CNN networks into high-quality contours," right? 02:18

16 A I see where it says that.

17 Q So is the "COB neural network" term that you
18 use throughout your declaration intended to include
19 any of those top performing-based CNN networks?

20 A The term that I'm using is -- 02:19

21 The "COB neural network" term that I'm using
22 is synonymous with the "COB" term in Maninis.

23 Q And is it your understanding that the
24 "COB" term in Maninis is used consistently with this
25 sentence that we've been looking at throughout? 02:19

1 MR. BLYTHE: Objection to form.

2 THE WITNESS: So one of the things that I've
3 identified in my extensive review of Maninis is that
4 it's not a particularly clearly written paper. And
5 so I'm -- I'm not sure whether or not -- 02:20

6 I would need to take some additional time to
7 consider whether this single sentence that you're
8 pointing to in Maninis fully characterizes how the
9 term "COB" is used throughout the paper or not.

10 BY MR. ARGENTI: 02:20

11 Q So which part of the paper are you saying
12 your definition is consistent with?

13 MR. BLYTHE: Objection to form.

14 THE WITNESS: I'm saying that there is a term
15 introduced by Maninis in this manuscript and I'm 02:21
16 using the term "COB neural network" as equivalent to
17 their term "COB."

18 BY MR. ARGENTI:

19 Q Right.

20 But you're also telling me that you're not 02:21
21 sure if "COB" is used consistently throughout
22 Maninis, which is fine, I'm not asking you to commit
23 to that without further review.

24 But what usage of "COB" in Maninis is
25 equivalent to your term "COB neural network"? 02:21

1 MR. BLYTHE: Objection to form.

2 THE WITNESS: So I believe you're asking me to
3 identify a single place in Maninis where a single
4 definition is provided for "COB" that I can accept as
5 a complete definition of the term. And based on the 02:22
6 nature of this manuscript, that is very complex and
7 not clearly written, I can't off the --

8 I haven't previously considered whether
9 there was a single sentence or single location that
10 fully describes everything that they mean by "COB" 02:22
11 and I would need additional time to consider whether
12 there is any single place that fully describes the
13 scope of how they use "COB" or whether, in fact, it
14 requires multiple usages to capture the full scope of
15 what -- of what they use it to mean. 02:23

16 BY MR. ARGENTI:

17 Q Respectfully, Dr. Mongan, that's not what I
18 was asking you; I wanted to let you get your whole
19 answer out but that was not my question.

20 My question and this line of questions goes 02:23
21 to what do you mean with this term "COB neural
22 network" that you coined for your declaration. And
23 you've told me that you mean it to be consistent with
24 the usage of the term "COB" in Maninis; so I'm trying
25 to get at what your understanding of that term is as 02:23

1 a way of understanding what you mean by this term
2 "COB neural network" in your declaration.

3 And if you are unable to explain what
4 Maninis means by the term "COB" in its paper, then
5 how can that be what you mean with reference to this 02:24
6 "COB neural network" in your declaration?

7 A Okay.

8 MR. BLYTHE: Let me object to that question.
9 I'll object to form, if that's a question.

10 BY MR. ARGENTI: 02:24

11 Q It was a question, Dr. Mongan.

12 A Okay.

13 Q But I'll rephrase it.

14 A Thank you.

15 Q You use a term "COB neural network" in your 02:24
16 declaration that doesn't appear in Dr. Foroosh's
17 declaration or in the Maninis paper or any of the
18 other prior art.

19 If Maninis itself, in your view, is unclear
20 what it means by the term "COB," how can you anchor 02:24
21 your own term "COB neural network" to Maninis's COB?

22 MR. BLYTHE: Objection to form.

23 THE WITNESS: I'm still trying to understand
24 whether the question here is whether there's a
25 difference between "COB neural network" and "COB," 02:25

1 and whether you're objecting to me referring to this
2 as "COB neural network" rather than just "COB" as
3 it's referred to in the Maninis manuscript, or
4 whether you're asking me to give a description of
5 what "COB" means in the Maninis manuscript. 02:25

6 BY MR. ARGENTI:

7 Q I suppose all of the above but let's take
8 those one at a time.

9 If the term that you coined, "COB neural
10 network," for your declaration is intended to be 02:25
11 equivalent to the Maninis's usage of the term "COB,"
12 why not use just the term "COB"?

13 MR. BLYTHE: Objection to form.

14 THE WITNESS: I thought it would make it clearer
15 to people reading my declaration to use a term that 02:26
16 indicated what COB was rather than to just use an
17 opaque acronym of COB.

18 BY MR. ARGENTI:

19 Q So let's look again at that first sentence
20 of the second paragraph under "Introduction" on 02:26
21 Maninis.

22 A First sentence, second paragraph, is that
23 what you said?

24 Q The same one we looked at before.

25 A Yes. 02:26

1 Q Where it says that "This paper proposes
2 Convolutional Oriented Boundaries (COB), a generic
3 CNN architecture"; so "COB" is at least a generic CNN
4 architecture, right?

5 A That's how it's described in this sentence, 02:27
6 yes.

7 Q And then it goes on to say "and we show how
8 it translates top performing base CNN networks into
9 high-quality films"; so my question then would be
10 when you are referring to the term "COB neural 02:27
11 network" is it just a generic CNN architecture that
12 Maninis talks about in the first part of that
13 sentence or is it the generic CNN architecture that
14 has been used to translate a base CNN network?

15 A Okay. I think that's not a well-formed 02:27
16 question because I don't think those are separable
17 concepts.

18 So if we look at Figure 2 of Maninis, which
19 is captioned "Our deep learning architecture," we see
20 that the base CNN, that's the portion inside the red 02:28
21 dashed box, is a component of the architecture.

22 Q There are a number of different based CNNs
23 that could be used, right?

24 A More than one base CNN could be used, not --
25 let me refine that. 02:29

1 There's more than one option for which base
2 CNN could be used.

3 Q Which base CNN could be used in the
4 COB neural network, as you understand the term?

5 A There is more than one possible choice for 02:29
6 which base CNN could be used within the COB neural
7 network.

8 Q And what specifically are the
9 "top performing base CNN networks" that Maninis
10 refers to in that sentence on the first page that 02:30
11 we've been looking at?

12 A I believe they're referring to VGGNet and
13 ResNets 50.

14 Q What about PSPNet?

15 A Would you like me to -- would you like to 02:31
16 direct me to --

17 You're referring to PSPNet at the bottom of
18 page 9?

19 Q Sure. That's one example.

20 Is that PSPNet at the bottom of page 9 one 02:31
21 of the "top performing base CNN networks" that they
22 refer to in the second paragraph of the first page?

23 A No, it's not.

24 Q What about Fast R-CNN, is that one of the
25 top performing base CNN networks that they're 02:32

1 referring to on the first page?

2 A No, I don't think so.

3 Q Let's turn to page 2 of Maninis. And at the
4 end of the first paragraph on that page, the one that
5 carries over from page 1, do you see where Maninis 02:33
6 says "We have also studied the effects of COB when
7 coupled with well-known pipelines, showing that
8 injecting COB detections to them lead to improvements
9 on Semantic Segmentation and Object Detection."

10 A I see that sentence. 02:33

11 Q What are the "well-known pipelines" that
12 Maninis injected COB detections into?

13 A I believe the "well-known pipelines" that
14 they are referring to are Dilated Network, PSPNet and
15 Fast R-CNN. 02:34

16 Q Let's go back to that sentence in the second
17 paragraph on page 1 where it talks about "translates
18 top performing base CNN networks."

19 You identified VGGNet and ResNet as
20 examples. 02:34

21 Are there any others that you've identified
22 that Maninis talks about?

23 MR. BLYTHE: Objection to form.

24 THE WITNESS: I believe those two are at least
25 the primary that they test as base networks within 02:35

1 their network architecture.

2 BY MR. ARGENTI:

3 Q And so when you are referring in your
4 declaration to the "Maninis COB neural network," are
5 you referring to the COB generic CNN architecture 02:35
6 that has been used to translate either VGGNet or
7 ResNet?

8 A I'm referring to what Maninis describes as
9 "COB," which I understand from Maninis to be what's
10 described -- what's diagrammed and outlined in 02:36
11 Figure 2, captioned "Our deep learning architecture,"
12 and which includes within it a base CNN. And that
13 two example base CNNs that they tested within this
14 architecture were ResNet 50 and VGGNet.

15 Q If we look again at page 2 of Maninis, the 02:36
16 last full paragraph on that page, the last sentence
17 of that paragraph reads "In this work, we present
18 results using both VGGNet and ResNet, showing that
19 COB is modular and can incorporate and benefit from
20 material future improvements in the base CNN." 02:37

21 Do you see that?

22 A I do see that.

23 Q What's your understanding of what Maninis
24 means when it says that "COB is modular"?

25 A My understanding is that they are indicating 02:37

1 that their network architecture is not dependent on
2 any specific base CNN and that there are multiple
3 potential choices for the base CNN. And that future
4 CNNs that have the form of image classification
5 networks could be used as the base CNN in their 02:38
6 architecture.

7 Q Now, in your opinion -- sorry. Strike that,
8 start over.

9 In your declaration, you state the opinion
10 that what you call the "Maninis COB neural network" 02:38
11 is incapable of classifying objects in any direction,
12 right?

13 A Can you direct me to the statement you're
14 referring to just so that I make sure that we're
15 looking at the same thing? 02:38

16 Q If we look at paragraph 170.

17 A So I see that it -- so in 17- --
18 in paragraph 170 I state that the Maninis COB neural
19 network is "capable of identifying" contours in an
20 image but not what kind of object those contours 02:39
21 represent.

22 Q So in your view, the Maninis COB might be
23 able to identify regions in an image likely
24 detecting -- depicting objects but it can't determine
25 what those objects might be; is that right? 02:39

1 A Effectively what it can do is draw that --
2 draw the boundaries of things, but it doesn't know
3 what those things are, or identify what those things
4 are in its output.

5 Q So if we look at the sentence on page 2 of 02:40
6 Maninis in the first paragraph, the sentence that
7 reads "We have also studied the effects of COB when
8 coupled with well-known pipelines, showing that
9 injecting COB detections to them lead to improvements
10 on Semantic Objectification and Object Detection." 02:40

11 Do you remember that sentence?

12 A I do remember that sentence.

13 Q Does your definition of "COB neural network"
14 exclude Maninis's disclosure of injecting
15 COB detections into well-known pipelines? 02:40

16 MR. BLYTHE: Object to form.

17 THE WITNESS: So -- so my use of the term
18 "COB neural network" is synonymous with the term
19 "COB" in Maninis. And looking at the sentence in
20 Maninis that you've directed me to, they talk about 02:41
21 coupling COB with different networks or different
22 pipelines that are not themselves COB.

23 BY MR. ARGENTI:

24 Q They talk about injecting COB networks to
25 lead to improvements; so in your view that is outside 02:42

1 the scope of your definition of "COB neural
2 networks," right?

3 MR. BLYTHE: Objection to form.

4 THE WITNESS: So they talk about taking their
5 COB and taking the -- the detections -- the output of 02:42
6 their COB and using those either as an input or in
7 combination with the results of other networks.

8 So my term of "COB neural network" would
9 include the part of that coupling that is COB, just
10 as Maninis has used the term "COB," but not the part 02:43
11 of that coupling that is not COB.

12 BY MR. ARGENTI:

13 Q And I want to go back to an answer that you
14 just gave because I think I'm going to quibble with
15 it a little bit. 02:43

16 You gave the answer that your term "'COB
17 neural network' is synonymous with 'COB' in Maninis,"
18 except that earlier you testified that you weren't
19 sure that Maninis uses "COB" in a consistent way
20 throughout. And that you intended your term 02:43
21 "COB neural network" to be equivalent to COB but you
22 couldn't actually say that it is; so are you changing
23 that testimony now?

24 MR. BLYTHE: Objection to form.

25 Objection to form. 02:43

1 THE WITNESS: So I believe what I said was that
2 I wasn't sure that it was a single statement in
3 Maninis that captured the entire scope of what
4 "COB" means. And I understood that what you were
5 asking me for was to direct you to a single statement 02:44
6 that fully defined what "COB" means, a single
7 sentence in Maninis, and that's what I was uncertain
8 if I could find for you.

9 BY MR. ARGENTI:

10 Q And I believe I explained that that's not 02:44
11 what I was asking you, and I'm still not asking you
12 that, but we can move on.

13 So if I understand it right, your view that
14 the Maninis COB neural network can't determine what
15 objects in an image might be is the basis of your 02:44
16 opinion that the combinations Dr. Foroosh proposes
17 would be inoperable, correct?

18 A I think that's one of the -- one of the
19 aspects of Dr. Foroosh's combination that is
20 inoperable. 02:45

21 Q I'm looking at the section with the heading
22 "A POSA WOULD HAVE RECOGNIZED THAT DR. FOROOSH'S
23 PROPOSED COMBINATION IS INOPERABLE."

24 Is there anything else, any other aspect of
25 inoperability that you address? 02:45

1 A I believe there is, just give me a minute to
2 locate the relevant section here.

3 So in addition to the form of the output or,
4 you know, what -- what analysis is performed by the
5 Maninis COB neural network rendering the combination 02:48
6 inoperable, Dr. Foroosh's combination proposes to run
7 on a cell phone. And the performance of Maninis
8 COB neural network would not be sufficient to render
9 it -- would render it inoperable for the purposes
10 that Dr. Foroosh describes in terms of combination 02:48
11 with Carrier for it to be able to provide feedback on
12 an alignment with an overlay.

13 Q Understood.

14 For now, let's just focus on paragraphs 168
15 to 172 of your declaration. 02:49

16 A Okay.

17 Q The section on inoperability, your opinions
18 in these paragraphs are all about the inability of
19 the Maninis COB neural network to classify objects;
20 is that right? 02:49

21 A These paragraphs discover the inability of
22 the Maninis network -- the Maninis COB neural network
23 to identify the class Maninis type of object that it
24 draws boundaries for.

25 MR. BLYTHE: Before you go on to the next 02:49

1 question, Matt, we've been going about an hour and
2 20; want to take a five-minute break here?

3 MR. ARGENTI: I was just about to suggest the
4 same thing.

5 MR. BLYTHE: All right. 02:49

6 THE WITNESS: Okay. Five minutes; so we'll be
7 back at 5 till?

8 MR. ARGENTI: Sure.

9 THE WITNESS: Thank you.

10 (Off the record.) 02:50

11 BY MR. ARGENTI:

12 Q Okay. Let's turn now to page 78 of your
13 declaration, Dr. Mongan, and look at paragraph 135.

14 A Yes.

15 Q In this paragraph you make a distinction 02:56
16 between what Maninis calls "Low Level Applications"
17 and "High Level Applications," right?

18 A The first sentence of paragraph 135
19 identifies that Maninis distinguishes between
20 "Low Level Applications" in Section 5 and 02:56
21 "High Level Applications" in Section 6.

22 Q And in that next sentence you go on to say
23 "The low-level applications are those that can be
24 achieved with Maninis's COB neural network on its
25 own," right? 02:57

1 A Yes.

2 Q And you go on to say that "including
3 'generic image segmentation' and 'object boundary
4 detection'."

5 Do you see that? 02:57

6 A Yes. The ending part of that sentence is
7 "including 'generic image segmentation' and 'object
8 boundary detection'."

9 Q What is "generic image segmentation"?

10 A "Generic image segmentation" in -- in this 02:57
11 context means segmenting an image into things without
12 distinguishing what those things are.

13 Q What is "object boundary detection"?

14 A "Object boundary detection" is a closely
15 related concept which is identifying where the 02:58
16 borders of those things are; so really what we're
17 talking about here with segmentation versus
18 boundaries is whether you're identifying all of the
19 pixels that represent the thing on the image, which
20 is segmentation, or the pixels that represent the 02:58
21 edge of the thing, which is boundary detection.

22 Q If you've identified the pixels that
23 represent the edge of the thing, haven't you also
24 then implicitly identified the rest of the pixels
25 that comprise the thing? 02:58

1 A They're very closely related concepts and
2 it's fairly straightforward to --

3 If you have one representation it's fairly
4 straightforward to convert to the other, but they're
5 not identical. 02:59

6 Q Are there any other low-level applications
7 in Maninis other than generic image segmentation and
8 object boundary detection?

9 A I believe contour orientations would also
10 fall into that category. 03:00

11 Q What is "contour orientation"?

12 A My understanding is that contour orientation
13 is for a particular boundary pixel classifying the
14 general direction in which that boundary is running.

15 Q In paragraph 135 of your declaration you go 03:01
16 on to say that the low-level applications are
17 accomplished "without distinguishing the semantics,"
18 right?

19 A So I have a sentence that says "As Maninis
20 explains, with 'object boundary detection'...'the 03:01
21 goal is to detect the boundaries of the objects that
22 belong to the 20 classes of PASCAL without
23 distinguishing the semantics'"; is that the sentence
24 you're referring to?

25 Q Right. 03:01

1 And then you explain in the next sentence
2 that "A POSA would have understood that 'without
3 distinguishing the semantics' means without
4 identifying what object is contained within the
5 boundary," right? 03:02

6 A Yes, that's the next sentence.

7 Q So do I understand it correctly, then, that
8 in your view "distinguishing the semantics" refers to
9 identifying what object is contained within a
10 boundary in an image? 03:02

11 A Yes, identifying the -- the class of the --
12 of the object.

13 Q Then my next question was is another way to
14 refer to that as "object classification"? It sounds
15 like it is, correct me if I'm wrong. 03:02

16 MR. BLYTHE: Object to form.

17 THE WITNESS: So "segmentation," as we've
18 described, is identifying the things in -- in an
19 image. And "semantic segmentation" is going beyond
20 just identifying that it's a thing but for each thing 03:02
21 that is identified, identifying what class that thing
22 falls into.

23 BY MR. ARGENTI:

24 Q So in the context of Maninis, is it your
25 understanding that distinguishing the semantics is 03:03

1 necessary in order to perform the object
2 classification?

3 A I don't think that's a well-formed question.

4 Q How so?

5 A Can -- can you repeat or rephrase your 03:03
6 question?

7 Q Sure.

8 I think you agreed that you understand
9 Maninis's reference to "distinguishing the semantics"
10 to refer to identifying what object is contained 03:03
11 within the boundary and in the image, right?

12 A "Distinguishing the semantics" -- excuse me.
13 Detecting the boundaries without
14 distinguishing the semantics is just identifying that
15 there's a thing without identifying what type of 03:04
16 thing it is.

17 Identifying semantic boundaries would be
18 identifying the boundaries of things and also what
19 kind of thing it is.

20 Q Is it possible to identify what kind 03:04
21 of thing it is without detecting the semantic
22 boundaries?

23 MR. BLYTHE: Objection to form.

24 THE WITNESS: So there are --

25 If you do object boundary detection without 03:05

1 distinguishing the semantics, you don't know what
2 type of thing it is.

3 BY MR. ARGENTI:

4 Q Let's turn back to the Maninis paper,
5 Exhibit 1007. 03:05

6 A Yes, I'm on that page.

7 Q Actually, before we dig into the paper, let
8 me ask one more question.

9 Is distinguishing semantics a high-level
10 application in Maninis? 03:05

11 MR. BLYTHE: Objection to form.

12 THE WITNESS: So in the Maninis manuscript,
13 Section 6 is titled "Experiments on High-Level
14 Applications." And within that section, Section 6.2
15 is titled "Semantic Boundaries and Semantic 03:06
16 Segmentation."

17 BY MR. ARGENTI:

18 Q And does the discussion in Section 6.2
19 involve tests where they did distinguish semantics?

20 A So the -- the first sentence of that section 03:06
21 says "The task of Semantic Boundaries, introduced by
22 14, requires not only detecting the boundaries, but
23 also associating a semantic class to them."

24 And I would highlight that that
25 "associating" of a semantic class is not performed by 03:07

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1 COB but is performed by the other, as Maninis
2 describes them, pipelines that they -- well-known
3 pipelines that they couple to.

4 Q But it is performed in these tasks that they
5 describe in Section 6.2; is that correct? 03:07

6 A In Section 6.2 they describe taking neural
7 networks or neural network-based pipelines developed
8 by other authors that are capable of doing semantic
9 boundaries or semantic segmentations and improving
10 the precision of those results by coupling them with 03:08
11 the COB that's developed in Maninis.

12 Q Right.

13 And so to show that they could do that,
14 they just needed the exact run test that
15 distinguished the semantics, correct? 03:08

16 MR. BLYTHE: Objection to form.

17 THE WITNESS: So Maninis and his coauthors
18 report results in this manuscript that involve
19 semantic segmentation. And my understanding is that
20 in order to obtain those results, they would have 03:09
21 obtained the code that does the semantic segmentation
22 from the other investigators who developed it and
23 then run that, both separately and in conjunction
24 with the COB that -- the COB neural network that they
25 introduce in this manuscript. 03:09

1 BY MR. ARGENTI:

2 Q Is there any distinction between the term I
3 used in my question, "distinguishing the semantics,"
4 and the term that you used in your answer,
5 "semantic segmentation"? 03:09

6 When you refer to "semantic segmentation,"
7 is that "distinguishing the semantics"?

8 A The process of semantic segmentation is a
9 segmentation process that distinguishes semantics for
10 those segments. 03:10

11 MR. BLYTHE: I'm sorry, I don't see it on the
12 transcript, just objection to form on that last
13 question.

14 BY MR. ARGENTI:

15 Q Okay. So we jumped ahead to talk about 03:10
16 Section 6. Let's turn back and look at Section 5
17 which starts on page 5, Dr. Mongan, of Maninis.

18 Section 5 has the heading "Experiments on
19 Low-Level Applications," right?

20 A I see that heading. 03:10

21 Q So this is the section of Maninis that
22 describes the low-level applications like generic
23 image segmentation and object boundary detection; is
24 that right?

25 A Yes, I believe so. 03:10

1 Q And if we turn to Figure 10, which is part
2 of Section 5 on page 9, do you see that figure?

3 A I see Figure 10.

4 Q Let's focus on the rightmost column with the
5 image of two sheep. 03:11

6 Do you see that?

7 A I see that.

8 Q And if we look at the caption from
9 Figure 10, Maninis says the second row is an example
10 of "Generic Image Segmentation" and the third row is 03:11
11 an example of "Object Boundary" detection, right?

12 A I see that in the caption, yes.

13 Q Okay. Can you walk me through those one at
14 a time with reference to this figure?

15 What's happening to generate the generic 03:11
16 image segmentation result?

17 MR. BLYTHE: Objection to form.

18 THE WITNESS: Give me just a minute to review
19 this because, as I said, this is a very complex
20 manuscript and I want to speak precisely. 03:12

21 BY MR. ARGENTI:

22 Q Of course.

23 A So my understanding of Figure 10 is that the
24 first row in color shows the source input images that
25 are being processed. 03:14

1 The second row shows the generic image
2 segmentation results which are the results of
3 applying -- of applying the COB as it was trained as
4 discussed in Section 5.3 on the VOC trained dataset.

5 And the third row present the results of 03:15
6 row 1 as processed by the COB neural network as it
7 was trained as described in Section 5.4 on data
8 extracted from the PASCAL VOC 12 segmentation
9 database.

10 Q Are those iterative results? 03:15
11 Did they first do the generic image
12 segmentation and then do the object boundary
13 detection on the results of the generic image
14 segmentation?

15 A For row 3 for the object -- object boundary 03:16
16 results, my understanding is that those come directly
17 from the COB that they describe in 5.4. I don't
18 believe that --

19 It's not my understanding that row 3
20 represents running it through two different versions 03:16
21 of COB, if that's your question.

22 Q And at the end of the object boundary
23 results process, the system has detected two discrete
24 objects that correspond to sheep, right? It doesn't
25 know that they're sheep but it's detected two objects 03:17

1 that correspond to sheep, right?

2 MR. BLYTHE: Object to form.

3 THE WITNESS: So in the lower right panel of
4 Figure 3 we see that it has outlined two things, and
5 you and I can correlate that to the original image. 03:17

6 And based on our human ability to recognize things in
7 images, which is a capability that COB doesn't have,
8 we can recognize that those outlines around things
9 are sheep. But there would be no information in the
10 output of the COB neural net that would identify 03:18
11 those as sheep, just as outlines of things.

12 BY MR. ARGENTI:

13 Q And if we compare the generic image
14 segmentation results from the object boundary
15 results, it looks like the generic image segmentation 03:18
16 results captured additional boundaries or contours
17 that aren't reflected in the object boundary results;
18 it looks like there might be a tree in the background
19 and perhaps some stairs and then the ground under the
20 sheep' feet. 03:18

21 Do you see those lines?

22 MR. BLYTHE: Objection.

23 THE WITNESS: I see -- I see additional -- I see
24 in general more contours in row 2 than in row 3.

25 BY MR. ARGENTI: 03:19

1 Q How is the object boundary results process
2 able to discern between the two objects that are
3 sheep and the other objects and eliminate the
4 contours that aren't part of the two objects that are
5 shown in the results? 03:19

6 A So I will preface this by saying that these
7 convolutional neural networks are very complex and
8 understanding why they produce a particular output is
9 an active area of research and not something that
10 is -- and not -- not well developed. 03:20

11 With that as preface, we can sometimes make
12 reasonable estimations of why a neural network may
13 perform one way or a different way; so here we have
14 the same neural network architecture that was trained
15 on two different datasets. 03:21

16 The training in row 2 that's labeled as
17 "Generic Image Segmentation" is trained on the
18 PASCAL Context as well as the BSDS 500 datasets.

19 At the bottom of page 5, Maninis tells us
20 that the PASCAL Context dataset "contains carefully 03:21
21 localized pixel-wise semantic annotations for the
22 entire image on the PASCAL VOC 2010 detection
23 training set. This results in 459 semantic
24 categories across 10,000 (sic) images"; so the
25 training dataset that's used to develop the version 03:21

1 of COB neural network in row 2 is trained on input
2 images, where, as I understand it, every pixel in the
3 image has been segmented and there are a very large
4 number of classes.

5 In contrast, looking at page 7 for -- where 03:22
6 it describes the PASCAL VOC 12, in the middle of the
7 first paragraph it says "The goal is to detect the
8 boundaries of the object that belong to the
9 20 classes of PASCAL"; so from that I understand that
10 in the dataset used for the object boundary results 03:22
11 training for row 3, there are a far smaller number of
12 classes and it's likely that on a given image only a
13 few foreground things would have been segmented.

14 And so while it's important to know for
15 certain why -- why a neural network of the complexity 03:23
16 of that described in Maninis does anything, the
17 difference in the nature of the training data I think
18 would be the most reasonable explanation for why the
19 same neural network architecture would produce these
20 different -- these different outputs from the same 03:23
21 input images.

22 Q Okay. So if I understand correctly then,
23 the object boundary results in Figure 10 used a
24 network that was trained on a learning set that
25 had 20 classes. 03:23

1 I think that's what you said, right?

2 A So it was trained on data that was extracted
3 from a training set that had 20 classes. Before that
4 training data went into COB, all of those 20 classes
5 were flattened down to just the boundaries around 03:24
6 whatever the things were that happened to be in those
7 20 classes.

8 But because there were only 20 classes of
9 things that they were -- that were segmented in the
10 PASCAL VOC 12 segmentation database, I would 03:24
11 suspect -- and I don't have the images in front of me
12 to confirm this, but I would suspect that on any
13 given image there would be far fewer segments and,
14 thus, far fewer boundaries.

15 And so the network would learn that it's 03:24
16 only the -- would learn to only segment the things
17 that it was seeing in its training dataset which
18 would be a small number of foreground images rather
19 than a much larger number of boundaries as it would
20 have seen in the training data for the generic image 03:25
21 segmentation in row 2.

22 Q Got it.

23 So the object boundary results are based on
24 the system essentially looking for objects that fall
25 into one of 20 classes and only depicting those and 03:25

1 that's why the background things like trees are
2 excluded there that were picked up by the generic
3 image segmentation results; is that right?

4 MR. BLYTHE: Objection.

5 THE WITNESS: So I just want to be -- 03:25

6 MR. BLYTHE: I just wanted to make sure that got
7 on the record.

8 Objection to form.

9 Just give me a beat.

10 THE WITNESS: Sorry, Mr. Blythe. 03:25

11 I just want to be really clear that it's not
12 that it's looking for objects that fall into one of
13 20 classes and that it knows whether something is in
14 that class or not, it's that it's been trained on a
15 dataset where the annotations on that dataset are 03:26
16 boundaries that are only applied to things that fall
17 into one of 20 classes. And, therefore, there would
18 be likely fewer boundaries in the training data or
19 the object boundary detection version of trained --
20 version of COB than for the generic image 03:26
21 segmentation version of COB.

22 BY MR. ARGENTI:

23 Q Taking a step back from Figure 10
24 specifically and talking more generally about this
25 Figure 5 of Maninis, it's your view that the 03:26

1 low-level applications in Section 5 of Maninis are
2 performed by what you refer to as the "Maninis COB
3 neural network," correct?

4 A I'm sorry, you said you wanted to look at
5 Figure 5? 03:27

6 Q No. I think I did and I misspoke, I'm
7 sorry. Let me ask my question again.

8 Is it your view that the low-level
9 applications in Section 5 of Maninis are performed by
10 what you refer to as the "Maninis COB neural 03:27
11 network"?

12 A My understanding is that the things that are
13 detailed in Section 5 of Maninis are the experiments
14 that are performed on the work that's developed that
15 is novel to Maninis, that's developed in Maninis, 03:28
16 which is what I've been referring to as the
17 "COB neural network," and not in conjunction with
18 other networks.

19 Q And so when you say in your declaration that
20 the combination of Maninis and the other prior art 03:29
21 references would be "inoperable" in that section
22 starting at paragraph 168, it's because those
23 specific neural networks used for the experiments in
24 Section 5 of the paper would not be able to perform
25 on the classification; is that right? 03:29

1 MR. BLYTHE: Objection to form.

2 THE WITNESS: So the aspect of inoperability of
3 Dr. Foroosh's combination that I'm addressing in
4 168 is based on the inability of the Maninis COB to
5 produce semantic contours. 03:29

6 BY MR. ARGENTI:

7 Q Okay. Let's turn now to Section 6 of
8 Maninis.

9 This section is entitled "Experiments on
10 High-Level Applications," correct? 03:30

11 A Yes, that's what I see it titled.

12 Q And this section starts on page 9 and goes
13 through the top of page 13, right?

14 A Yes.

15 Q At the bottom of page 9, in that first 03:30
16 paragraph under the Section 6 heading, Maninis says
17 they combined "COB with Dilated Network and PSPNet."

18 Do you see that?

19 A I see that it says, yes, "combining COB with
20 Dilated Network and PSPNet." 03:31

21 Q We touched on this a little bit earlier but
22 what is "Dilated Network"?

23 A My understanding is that "Dilated Network"
24 is a -- is something that performs semantic
25 segmentation. 03:31

1 Q Is "Dilated Network" a convolutional neural
2 network?

3 A I'm not sure.

4 Q What is "PSPNet"?

5 A My understanding is that "PSPNet" is an 03:32
6 alternate architecture for performing semantic
7 segmentation.

8 Q Is PSPNet a convolutional neural network?

9 A I don't have the information in front of me
10 to make that determination. 03:32

11 Q Do you know whether PSPNet is a neural
12 network?

13 A I would be very surprised if it wasn't but
14 I -- I don't have that information in front of me.

15 Q So then do I gather that you yourself had 03:33
16 not heard of a PSPNet as of June 2017?

17 A Give me a moment.

18 I think one of these things may be -- I
19 think some of the answers to the questions you've
20 asked here might be referenced in my declaration. 03:33

21 Q If it helps, you might want to take a look
22 at page 81 of your declaration.

23 A Thank you.

24 Okay. No. As I review this -- my
25 declaration, it reminds me that I did look at the 03:35

1 references for Dilated Network and PSPNet and
2 determined that they were neural networks.

3 Q Are they convolutional neural networks?

4 A I don't recall what I determined on that and
5 I don't see a statement in my declaration as to 03:35
6 whether or not they're convolutional neural networks.
7 If that's important at the moment, if you have those
8 references we could look at that.

9 Q No, that's fine.

10 Looking again at Maninis, page 9, under that 03:35
11 heading Section 6 where it says "In Section 6.2,
12 we study the interplay of our boundary detector with
13 semantic contours and semantic segmentation by
14 combining COB with Dilated Network and PSPNet."

15 Do you agree that Maninis describes 03:36
16 combining COB with Dilated Network and PSPNet?

17 A I agree that Maninis uses the word
18 "combining" to describe what they did with COB and
19 PSPNet.

20 Q And in that same sentence at the bottom of 03:36
21 page 9 Maninis goes on to say "In Section 6.3 we
22 couple the COB proposals with the Fast R-CNN pipeline
23 for object detection."

24 Do you see that?

25 A I see that sentence, yes. 03:36

1 Q What is "Fast R-CNN"?

2 A "Fast R-CNN" is an object detection
3 pipeline.

4 Q The Fast R-CNN pipeline is not something
5 that Maninis came up with on its own in this paper, 03:37
6 right?

7 A Fast R-CNN is a separately published work
8 and to my knowledge there is -- it's -- it was
9 created by different investigators.

10 Q And the Fast R-CNN pipeline was known in the 03:37
11 field before the Maninis paper was published, right?

12 MR. BLYTHE: Objection to form.

13 THE WITNESS: Fast R-CNN was -- is a pipeline
14 that was known in the computer vision field prior
15 to 2017. 03:38

16 BY MR. ARGENTI:

17 Q And likewise, Dilated Network and PSPNet
18 were also known in the computer vision field before
19 the publication of Maninis, right?

20 MR. BLYTHE: Objection to form. 03:38

21 THE WITNESS: So I think it's fair to say that
22 they were known to Maninis and his coauthors at the
23 time that they wrote this manuscript and did this
24 work.

25 BY MR. ARGENTI: 03:39

1 Q And they cite at least one published work
2 that describes that, correct?

3 MR. BLYTHE: Objection to form.

4 THE WITNESS: They make citations for each of
5 those; whether or not those are citations that have 03:39
6 been published, I don't know.

7 BY MR. ARGENTI:

8 Q When we look at that sentence again when it
9 says "In Section 6.3 we couple the COB proposals with
10 the Fast R-CNN pipeline for object detection," do you 03:40
11 agree that in Section 6.3 Maninis describes coupling
12 the COB proposals with the Fast R-CNN pipeline for
13 object detection?

14 A So my understanding of the work described in
15 Section 6.3 is that a process version of the output 03:40
16 of COB is used as an input to the Fast R-CNN-type
17 line. And so to the extent that that might be
18 described as "coupling," then they are coupled.

19 Q Section 6 of Maninis describes high-level
20 applications including object classification, 03:41
21 correct?

22 MR. BLYTHE: Objection to form.

23 THE WITNESS: Is there somewhere that you see
24 the term "object classification"?

25 BY MR. ARGENTI: 03:42

1 Q Earlier I thought you were distinguishing
2 Section 5 of Maninis as not involving object
3 classification; so now I'm trying to get to
4 Section 6.

5 Is it your understanding that the 03:42
6 experiments described in Section 6 of Maninis
7 resulted in object classifications?

8 MR. BLYTHE: Objection to form.

9 THE WITNESS: I don't think that's the
10 terminology that I'd use. 03:42

11 BY MR. ARGENTI:

12 Q Do the experiments in Section 6 involve
13 semantic segmentation?

14	A Some of them do.
----	--------------------

15	Q Which would you point to for that?	03:42
----	--------------------------------------	-------

16 A So, for instance, the results presented in
17 Figure 16 involving the Dilated Network -- or Dilated
18 Convolutional Network are semantic segmentations.

19 Q So if we look at Figure 16, for example, in
20 the left column, they were able to distinguish 03:43
21 between the objects in the image that are people from
22 the objects that are a table or a bottle, right?

23 A So in Figure 16 we see in row 2 that the
24 dilated convolution network was able to do that
25 semantic segmentation and maybe -- distinguish 03:44

1 between those classes that you had mentioned.

2 Q And the tables at the top of page 11
3 provide -- provide further results of the experiments
4 that Maninis describes in Section 6, right?

5 A Yes, the tables at the top of page 12 all 03:45
6 appear to be referenced from the "Results" of
7 Section 6.

8 Q Do each of those tables involve
9 distinguishing the semantics?

10 MR. BLYTHE: Objection to form. 03:45

11 THE WITNESS: My understanding is that the
12 results presented in Tables 4 through 7 involve
13 distinguishing semantics.

14 BY MR. ARGENTI:

15 Q And in those tables and the corresponding 03:46
16 discussion of Maninis, Maninis says that the
17 approaches using COB for semantic segmentation
18 perform better than the ones that didn't involve COB,
19 right?

20 A Is there a particular statement or sentence 03:46
21 that you'd like to direct me to for that?

22 Q Well, we can still look at the results in
23 those tables where the approaches that used COB are
24 bolded, right?

25 A Yes, I'm looking at the table. 03:46

1 Q What's your understanding of the relevance
2 of that bolding?

3 A My understanding of -- I --

4 It appears that the largest magnitude number
5 in each column is bold. 03:47

6 Q Does a larger magnitude number mean more
7 accurate results?

8 A It means a higher score on the metric that
9 they were using.

10 I think it's important to recognize that 03:47
11 accuracy for a complex task like this could be
12 measured in different ways. And I think that as we
13 see in Figure 16, primarily what they're achieving
14 with the combination of COB and these other networks
15 is greater precision around the edges of the 03:47
16 segmentations, or greater precision of the boundaries
17 and closer correspondence of those boundaries with
18 the ground/tree boundaries.

19 Q So I think you just might have answered my
20 next question but just to confirm, some of the 03:48
21 entries on those tables on page 12 of Maninis are
22 identified as involving COB, correct?

23 A Some of the rows involve a combination of an
24 existing network or pipeline with COB.

25 MR. ARGENTI: I think it's time to take another 03:48

1 break. It can be a quick break, and then I think I'm
2 close to wrapping it up.

3 Sound good?

4 Five minutes.

5 MR. BLYTHE: Should be good. 03:49

6 Is that okay with you, John, or do you need
7 a little more this time?

8 THE WITNESS: Why don't we make it six and come
9 back at 55, all right? That will give me time to get
10 down the hall. 03:49

11 (Off the record.)

12 MR. ARGENTI: Back on the record.

13 Q Dr. Mongan, earlier today we took two breaks
14 so that you could discuss with Mr. Blythe a possible
15 issue of privilege or work product. 03:55

16 Aside from those two instances, have you
17 discussed your testimony with Mr. Blythe or Dental
18 Monitoring's counsel at any point during this
19 deposition?

20 A No, I have not. 03:55

21 MR. ARGENTI: That's all my questions, then,
22 subject to any follow-up after redirect.

23 Thank you, Dr. Mongan.

24 THE WITNESS: Thank you Mr. Argenti.

25 MR. BLYTHE: So can we go off the record just 03:56

1 briefly? I'm going to look at my notes, I may have
2 some redirect, we'll get to that in a second.

3 Can we go off, maybe come back --

4 I know we want to try to get wrapped up
5 here. 03:56

6 -- maybe 4:05?

7 MR. ARGENTI: No, works for me.

8 MR. BLYTHE: Okay. Thank you.

9 (Off the record.)

10 04:04

11 EXAMINATION

12 BY MR. BLYTHE:

13 Q Dr. Mongan, can you please turn back to
14 Exhibit 1007 and the Maninis reference?

15 A Okay. I have that in front of me. 04:14

16 Q Do you recall Mr. Argenti asking you
17 questions about the language at page 1 of the Maninis
18 reference regarding "base CNN networks"?

19 A Yes, I do recall some questions regarding
20 that. 04:14

21 Q Does which base CNN network that is included
22 in the COB neural network or COB generic
23 CNN architecture impact your opinions regarding the
24 operability of the combination proposed by
25 Dr. Foroosh? 04:15

1 MR. ARGENTI: Objection. Form.

2 THE WITNESS: No. My opinions regarding the
3 operability of -- the inoperability of the
4 combination proposed by Dr. Foroosh would be
5 independent of which base CNN was used inside of the 04:15
6 COB architecture because changing the base CNN
7 doesn't change the form of the input or form of the
8 output of the COB neural network. And it -- it's the
9 form of the output that makes it inoperable.

10 BY MR. BLYTHE: 04:15

11 Q And how does the base CNN factor into the
12 COB neural network architecture?

13 MR. ARGENTI: Objection. Form.

14 THE WITNESS: The principal difference that one
15 would expect to see with different base CNNs 04:16
16 substituted into the COB neural network would be
17 small differences in performance as seen in Table 2.

18 BY MR. BLYTHE:

19 Q And I recall that you also were directed to
20 Figure 2 -- or sorry, you may have spoken to Figure 2 04:16
21 in discussing the base CNN network.

22 Do you recall that?

23 A Yes, I believe I did.

24 Q Do you have an understanding of how the
25 base CNN is functioning in that diagram of the 04:16

1 COB architecture?

2 A Yes, I believe I do.

3 Q And how does it function?

4 A So it functions as a multi-level feature

5 detector. 04:17

6 Q What is a "multi-level feature detector"?

7 A So it uses the feature detection portion of
8 a base CNN that was originally trained for object
9 classification to identify contours at different
10 scales. 04:17

11 Q Is the feature detection portion an output
12 of that base CNN?

13 A When the base CNN is used in its originally
14 conceived or architected fashion, it is not an
15 output -- there -- those feature detections are not 04:18
16 outputs of the base CNN when it's used for the image
17 classification task for which it was originally
18 defined -- designed.

19 And, in fact, my understanding is that the
20 final layers of the base CNN that would perform the 04:18
21 image classification are removed when it's put into
22 here -- when it's put into the Maninis COB neural
23 network. And the feature maps are extracted from
24 intermediate layers of the base CNN.

25 MR. BLYTHE: Okay. No further questions; thank 04:19

1	you.
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2 MR. ARGENTI: Let's take a very quick break;
3 shouldn't be more than two minutes.

4	(Off the record.)
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5 MR. ARGENTI: Back on. 04:21

6 THE WITNESS: Yes.

7 MR. ARGENTI: No further questions from me,
8 Dr. Mongan.

9 MR. BLYTHE: Thank you.

10	THE WITNESS: Thank you, Mr. Argenti.	04:21
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11 MR. BLYTHE: Thank you, Dr. Mongan.

12 MR. ARGENTI: All right. Off the record again.

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REPORTER'S DEPOSITION TIME LOG:

REPORTER - LAURIE HELD-BIEHL
DATE - Tuesday, July 23, 2024

WITNESS - JOHN T. MONGAN, M.D., Ph.D.

ATTORNEY	ON RECORD	OFF RECORD	TOTAL
ARGENTI	10:11 A.M.	10:26 A.M.	0:15
	10:29 A.M.	10:55 A.M.	0:26
	10:57 A.M.	11:20 A.M.	0:23
	11:31 A.M.	11:54 A.M.	0:23
	11:56 A.M.	12:49 P.M.	0:55
	1:31 P.M.	2:50 P.M.	1:19
	2:56 P.M.	3:49 P.M.	0:53
BLYTHE	3:55 P.M.	3:56 P.M.	0:01
		TOTAL USED:	4:35
	4:14 P.M.	4:19 P.M.	0:05
		TOTAL USED:	0:05

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I, the undersigned, a Certified Shorthand Reporter of the State of California, the State of Illinois and the State of Texas, a Certified Court Reporter for the State of New Jersey and the State of Washington, and Registered Professional Reporter, Certified Realtime Reporter, Registered Merit Reporter, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth; that the appearances of counsel are set forth herein; that the witness in the foregoing proceedings, prior to testifying, was placed under oath; that a verbatim record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction and that the foregoing is an accurate transcription thereof.

I further certify that I am neither financially interested in the action nor a relative or employee of any attorney or of any of the parties.

I further certify that Pursuant to

1 Rule 30(f)(1) of the Federal Rules of Civil
2 Procedure, prior to the completion of the deposition
3 the deponent DID request to read and sign said
4 deposition transcript and that further certification
5 requirements pursuant to Rule 30(f)(1) will be
6 certified after they have occurred.

7 IN WITNESS WHEREOF, I have this date
8 subscribed my name.

9
10 Dated: July 30 2024
11
12
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14

15 

16 LAURIE HELD-BIEHL, CSR, CCR, RPR, CRR, RMR
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1 ANDREW BLYTHE
2 ablythe@gibsondunn.com

3 July 30, 2024

4 RE: ALIGN TECHNOLOGY, INC. v. DENTAL MONITORING SAS
5 7/23/2024, JOHN T. MONGAN, M.D., Ph.D. (#6801299)

6 The above-referenced transcript is available for
7 review.

8 Within the applicable timeframe, the witness should
9 read the testimony to verify its accuracy. If there are
10 any changes, the witness should note those with the
11 reason, on the attached Errata Sheet.

12 The witness should sign the Acknowledgment of
13 Deponent and Errata and return to the deposing attorney.
14 Copies should be sent to all counsel, and to Veritext at
15 Calendar-PNW@Veritext.com

16
17 Return completed errata within 30 days from
18 receipt of testimony.

19 If the witness fails to do so within the time
20 allotted, the transcript may be used as if signed.

21

22 Yours,
23 Veritext Legal Solutions

24

25

1 ALIGN TECHNOLOGY, INC. v. DENTAL MONITORING SAS
2 JOHN T. MONGAN, M.D., Ph.D. (#6801299)
3 E R R A T A S H E E T
4 PAGE_____ LINE_____ CHANGE_____
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24 JOHN T. MONGAN, M.D., Ph.D. Date
25

1 ALIGN TECHNOLOGY, INC. v. DENTAL MONITORING SAS

2 JOHN T. MONGAN, M.D., Ph.D.(#6801299)

3 ACKNOWLEDGEMENT OF DEPONENT

4 I, JOHN T. MONGAN, M.D., Ph.D., do hereby declare that I
5 have read the foregoing transcript, I have made any
6 corrections, additions, or changes I deemed necessary as
7 noted above to be appended hereto, and that the same is
8 a true, correct and complete transcript of the testimony
9 given by me.

10

11

12 _____
JOHN T. MONGAN, M.D., Ph.D.

Date

13 *If notary is required

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

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Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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