

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 -----

3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4 -----

5 ARASHI VISION (U.S.) LLC (D/B/A INSTA360)

6 Petitioner,

7 vs.

8 GOPRO, INC.,

9 Patent Owner.

10 Patent No. 11,336,832

Inter Partes Review No. IPR2024-01052

11 LOCATION: Veritext Orlando
12 800 North Magnolia Avenue
13 Suite 400
14 Orlando, Florida 32803
15 DATE: July 1, 2025
16 TIME: 10:00 a.m. - 3:46 p.m.

17
18 DEPOSITION OF DR. HASSAN FOROOSH

19
20 Taken before Julie Giordano, Florida
21 Professional Reporter, Notary Public in and for the
22 State of Florida at Large, pursuant to Notice of
23 Taking Deposition filed in the above case.
24
25

1 APPEARANCES:

2
3 LILY LI, ESQUIRE

4 YUNAN YUAN, ESQUIRE

5 OF: MORRISON & FOERSTER LLP

6 755 Page Mill Road

7 Palo Alto, California 94304

8 yli@mofo.com

9 ayuan@mofo.com

10 Counsel for the Petitioner

11
12
13 NIMA HEFAZI, ESQUIRE

14 OF: QUINN EMANUEL URQUHART & SULLIVAN, LLP

15 865 South Figueroa Street

16 Los Angeles, California 90017

17 nimahefazi@quinnemanuel.com

18 Counsel for the Patent Owner

I N D E X

TESTIMONY OF DR. HASSAN FOROOSH	PAGE
DIRECT EXAMINATION	4
By Ms. Li	
CROSS-EXAMINATION	210
By Mr. Hefazi	

PETITIONER'S EXHIBITS

EXHIBIT		PAGE
Exhibit 1001	Stimm Patent	10
Exhibit 2001	Initial Declaration - Dr. Hassan Foroosh	10
Exhibit 2021	Supplemental Declaration - Dr. Hassan Foroosh	11
Exhibit 1004	Thomason Patent	115
Exhibit 1006	Watanabe Patent	144
Exhibit 1007	Voss Patent	187
Exhibit 1002	Declaration of Dr. Aggelos Katsaggelos	188
Exhibit 1008	Derbanne Patent	199
Exhibit 1005	Pacurariu Patent	208

1 Thereupon,

2 DR. HASSAN FOROOSH,
3 was called as a witness and, having been first duly
4 sworn, was examined and testified as follows:

5 THE WITNESS: I do.

6 DIRECT EXAMINATION

7 BY MS. LI:

8 Q. Good morning, Dr. Foroosh.

9 A. Good morning.

10 Q. Can you please state your name for the
11 record?

12 A. Hassan Foroosh.

13 Q. Do you understand you are under oath
14 today?

15 A. Yes.

16 Q. Any reason you can't testify
17 truthfully or accurately today?

18 A. No.

19 Q. How many times have you been deposed?

20 A. I don't remember off the top of my
21 head. Maybe eight to ten.

22 Q. Okay. So you're familiar with the
23 procedures?

24 A. Yes.

25 Q. Just a couple of things before we

1 start.

2 If there are any questions you don't
3 understand, please let me know. Okay?

4 A. Yes.

5 Q. And, please provide verbal responses
6 to my questions. Do you understand that?

7 A. Yes. I understand that.

8 Q. Great.

9 MR. HEFAZI: Let me just address
10 something. If you could just slow down
11 before you answer just so I have a chance
12 to process and object if I need to.

13 THE WITNESS: Sure.

14 BY MS. LI:

15 Q. Dr. Foroosh, how did you prepare for
16 your deposition today?

17 MR. HEFAZI: And I'll caution the
18 witness not to reveal any attorney-client
19 communications or the substance of any
20 communications.

21 THE WITNESS: Some Zoom meetings and a
22 face-to-face meeting on Sunday.

23 BY MS. LI:

24 Q. With whom?

25 A. With the counsel.

1 Q. Anyone else other than Nima?

2 A. No.

3 Q. And how long did you prepare for the
4 deposition with Nima?

5 A. I believe we had a Zoom call on Friday
6 last week for about an hour and a half and about
7 eight hours of a face-to-face meeting on Sunday and
8 a couple hours again on Zoom yesterday.

9 Q. Did you review any documents in
10 preparation for today's deposition?

11 MR. HEFAZI: And so I think that's
12 just calling for a yes or no at this point.

13 THE WITNESS: Yes.

14 BY MS. LI:

15 Q. What are the documents you have
16 reviewed?

17 MR. HEFAZI: So, I'll let you answer
18 kind of at a general level. Please don't
19 refer to any specific document.

20 THE WITNESS: All the documents that I
21 found relevant to this deposition. In
22 particular, my own declarations.

23 BY MS. LI:

24 Q. Anything other than your declarations
25 that refresh your recollection?

1 A. As I mentioned, my declaration and the
2 exhibits that were cited in there.

3 Q. Okay. You submitted two declarations
4 in this IPR proceedings for the '832 patent?

5 A. Correct.

6 (Reporter clarification.)

7 BY MS. LI:

8 Q. And these two declarations include the
9 entirety of the opinions you have for this IPR
10 proceedings for the '832 patent?

11 A. Yes. That's where I express my
12 opinions.

13 Q. You don't have any other opinions
14 that's not identified in your declarations,
15 correct?

16 A. Correct.

17 Q. And who drafted the declarations?

18 MR. HEFAZI: Objection. Form.

19 THE WITNESS: Well, it's my opinions.
20 So of course, I am not a lawyer. So I've
21 been advised on the legal aspects in those
22 documents. But other than that, I drafted
23 those documents and approved them.

24 BY MS. LI:

25 Q. Who physically typed up the

1 declarations?

2 MR. HEFAZI: Objection. Form.

3 THE WITNESS: I don't remember. I
4 mean, this was, you know, as I said, done
5 probably interactively because I am not a
6 lawyer. So in the legal aspects, I just --
7 I just was advised. But then the technical
8 aspects, those are my opinions.

9 BY MS. LI:

10 Q. You don't remember any portion of your
11 declaration that you physically typed up, correct?

12 MR. HEFAZI: Objection. Asked and
13 answered.

14 THE WITNESS: No. That's incorrect.
15 I said that I have written those documents.
16 But on the legal aspects, I was advised --
17 I am not a lawyer.

18 BY MS. LI:

19 Q. Dr. Foroosh, my question is, do you
20 remember, sitting here today, any portions of your
21 declarations that you personally and physically
22 typed up?

23 MR. HEFAZI: Objection. It's been
24 asked and answered.

25 THE WITNESS: But again, my answer is

1 the same. I --

2 BY MS. LI:

3 Q. Yes or no?

4 MR. HEFAZI: So, okay. Objection to
5 the extent you're trying to get him to
6 answer in a way that's not consistent with
7 how he needs to answer it. I mean, he can
8 answer as he feels comfortable.

9 So objection to form.

10 THE WITNESS: My answer remains the
11 same. This is entirely my opinion. And on
12 the legal aspects, I was advised, and I
13 approved it and signed it.

14 BY MS. LI:

15 Q. And, just to -- just for the record,
16 you have your initial declaration that's dated
17 October 16, 2024, correct?

18 A. Can I have a look at it to make sure
19 the date is correct?

20 Q. Just for the record, what are you
21 looking at?

22 A. I have three documents here. These
23 are marked -- Tab 1 is a marked patent '832. Tab 2
24 is a marked my original declaration. And Tab 3 is
25 a marked my supplemental declaration.

Page 9

1 Q. All right. And your initial
2 declaration is dated October 16, 2024, correct? I
3 think at the last page of your declaration.

4 A. Oh, yes. Yes.

5 Q. And, for the supplemental declaration,
6 which is Tab 3 in your binder, and that is dated
7 April 18th, 2025, correct?

8 A. Correct.

9 Q. Okay.

10 MR. HEFAZI: And Lily, just so we have
11 a clean record, do we want to just use the
12 exhibit numbers and identify those?

13 MS. LI: Yes. And just for the
14 record, the '832 patent, Dr. Foroosh, if
15 you go to that, that should be stamped as
16 Exhibit 1001.

17 THE WITNESS: Correct.

18 (Petitioner's Exhibit 1001 was
19 marked for identification.)

20 BY MS. LI:

21 Q. And your initial declaration dated
22 October 16, 2024, that should be stamped as
23 Exhibit 2001, correct?

24 A. Correct.

25 (Petitioner's Exhibit 2001 was

1 marked for identification.)

2 BY MS. LI:

3 Q. And your supplemental declaration
4 dated April 18th, 2025, that should be stamped as
5 Exhibit 2021, correct?

6 A. Correct.

7 (Petitioner's Exhibit 2021 was
8 marked for identification.)

9 BY MS. LI:

10 Q. Dr. Foroosh, how much time did you
11 spend on your initial declaration?

12 A. I don't remember.

13 Q. What's your best estimate?

14 A. I don't have -- I cannot remember how
15 much time I spent, to be perfectly honest.

16 Q. Twenty hours?

17 MR. HEFAZI: Objection. Asked and
18 answered.

19 THE WITNESS: Maybe. I don't remember
20 how many hours I spent on the initial
21 declaration.

22 BY MS. LI:

23 Q. Under 20 hours?

24 MR. HEFAZI: Objection.

25 THE WITNESS: Again, I don't remember.

Page 11

1 It could be 20 hours, more or less. I
2 don't remember how many.

3 BY MS. LI:

4 Q. Just a ballpark hour. I don't need
5 you to give me a precise number. But just in the
6 ballpark range.

7 MR. HEFAZI: Same objection.

8 THE WITNESS: I cannot give you an
9 answer. I cannot remember. I don't
10 remember how many hours I spent on that.

11 BY MS. LI:

12 Q. Did you remember working on the first
13 declaration at all?

14 A. Of course I remember I worked on the
15 first declaration.

16 Q. You don't remember how much time you
17 spent on it?

18 A. No. I don't remember how much time I
19 spent on it. I answered that question.

20 Q. Do you remember how much time you
21 spent on the second declaration?

22 A. I don't remember how much time I spent
23 on my second declaration.

24 Q. And what's your best estimate you can
25 give?

1 A. Again, I don't remember -- I don't
2 have a best guess how many hours I spent on the
3 second declaration.

4 Q. So how many hours have you spent so
5 far in the IPR proceeding for the '832 patent?

6 A. Again, I don't remember off the top of
7 my head how many hours I spent on this IPR.

8 Q. Under 50 hours?

9 A. I would say it's more than 50 hours
10 total.

11 Q. Okay. Under 100 hours?

12 A. I don't remember. I cannot answer
13 either way.

14 Q. Okay. But you don't know whether
15 that's over 100, but you know it's a little bit
16 over 50 hours?

17 A. That's not what I said. It could be
18 over 100. I just don't remember off the top of my
19 head.

20 Q. What do you remember about the
21 declarations --

22 MR. HEFAZI: Objection. Form.

23 BY MS. LI:

24 Q. -- without looking at it?

25 MR. HEFAZI: Objection to form.

1 THE WITNESS: I don't think this is a
2 memory contest. I think I'm here to
3 express my opinion and my opinion that I
4 have disclosed in my declarations. So I am
5 more than glad to do that.

6 BY MS. LI:

7 Q. When -- do you remember, when did you
8 work on the declarations?

9 A. After I was contacted and agreed to
10 work. I don't remember what day I started working
11 on this particular patent because there are
12 multiple patents that I'm working on with GoPro.

13 Q. Do you remember which month you
14 started working on any IPR in this case?

15 A. I signed a contract to work on
16 multiple IPRs last year, but I don't remember which
17 month it was.

18 Q. What's your hourly rate?

19 A. My hourly rate is \$650 an hour, flat
20 rate.

21 Q. Now, Dr. Foroosh, you opined that all
22 the claim terms for the IPR proceedings for the
23 '832 patent should be given their ordinary and
24 customary meaning, correct?

25 A. Correct. I -- and that's what I

Page 14

1 applied throughout my declaration except for the
2 board's opinion about one particular construction
3 that I've mentioned in my supplemental declaration.

4 Q. And what term is that?

5 A. It's in terms of the progress through
6 the progress.

7 Q. What does it mean to have ordinary and
8 customary meaning?

9 A. It means what it means. It means that
10 a POSITA would understand the meaning of the words
11 as of the priority date based on what is
12 customarily known what that word meant.

13 Q. What do you mean by "what is
14 customarily" known?

15 A. Well, I mean that the POSITA would
16 understand what it means.

17 Q. Based on what?

18 A. Based on what ordinarily and
19 customarily would have been understood by a POSITA
20 that day.

21 Q. What did you consider in forming the
22 ordinary and customary meaning of the claim terms
23 in the '832 patent?

24 A. Let me have a look. Which declaration
25 are we talking about?

1 Q. I'm not asking any specific
2 declarations. I'm just asking you, what did you
3 consider in forming the ordinary and customary
4 meaning of the claim terms?

5 A. I still would like to refer to my
6 declarations.

7 Here in my original declaration, I'm
8 saying "Legal Understanding." And that's page 8,
9 paragraph 17. I say: I understand that a person
10 of ordinary skill in the relevant art at the time
11 of the invention, also referred to herein as
12 "ordinary artisan," is presumed to be aware of all
13 pertinent art, thinks along conventional wisdom in
14 the art, and is a person of ordinary creativity,
15 not an automaton.

16 Q. Which paragraph are you referring to?

17 A. Paragraph 17 of my original
18 declaration.

19 Q. My question is what sources of
20 evidence you have considered in forming the
21 ordinary and customary meaning of the claim terms.

22 A. Sources of evidence? I'm not sure if
23 I understand your question.

24 Q. What types of documentations you
25 considered in trying to form your opinions

1 regarding the ordinary and customary meaning of the
2 claim terms.

3 MR. HEFAZI: Objection. Vague and
4 ambiguous.

5 THE WITNESS: I'm guessing what your
6 question is.

7 But again, paragraph 19 -- I guess
8 this is what you're asking me. In
9 paragraph 19 of my original declaration,
10 which I think is an exact copy of what is
11 my -- in my declaration also, supplemental
12 declaration.

13 I say: I have reviewed the
14 declaration of Dr. Katsaggelos, including
15 his opinions regarding the person of
16 ordinary skill in the art, which is a
17 person with "a bachelor's degree in
18 engineering or computer science, or
19 equivalent field, and two years of
20 experience working on image or video
21 processing or digital cameras" or,
22 alternatively, "four years of experience
23 working on image or video processing or
24 digital cameras."

25 Then I refer to Exhibit 1002,

Page 17

1 paragraph 37. And I'm saying that my
2 opinions set forth in this declaration
3 apply Dr. Katsaggelos's definition of a
4 POSITA.

5 I guess that's what your question is.

6 I wasn't clear about your question.

7 BY MS. LI:

8 Q. Do you understand what is intrinsic
9 evidence?

10 A. Did I express an opinion on that in my
11 declaration?

12 Q. You tell me.

13 A. No, I did not.

14 Q. Okay.

15 A. So otherwise, please indicate where I
16 expressed.

17 Q. So, you don't have an opinion of what
18 is intrinsic evidence?

19 MR. HEFAZI: Objection. Form.

20 THE WITNESS: I didn't say that. I
21 say to please point out in my supplemental
22 declaration. I believe I am here to
23 support what I opined in my supplemental
24 declaration. Please show me where I
25 expressed opinion on that.

1 BY MS. LI:

2 Q. But you don't recall, sitting here
3 today, what is intrinsic evidence?

4 A. Again, please point to me where I
5 expressed opinion on that.

6 Q. You don't remember whether you
7 actually mentioned intrinsic evidence in your
8 declaration; is that right?

9 A. That's not what I said. I said show
10 me where in my declaration I'm expressing any
11 opinion on that, and I would be glad to discuss it
12 with you.

13 Q. You don't know, sitting here today,
14 where is intrinsic evidence cited in your
15 declaration?

16 A. That is not what I said. I answered
17 your question. I said to please refer to my
18 declaration where I opined on intrinsic evidence.

19 Q. Do you know what is extrinsic
20 evidence, Dr. Foroosh?

21 A. Again, same answer. I don't believe I
22 expressed any opinion on that in my declaration.
23 If so, please refer to where I did so then I'll go
24 over that.

25 Q. Okay. Are you aware of the ITC

1 investigation involving the '832 patent?

2 MR. HEFAZI: Objection to form.

3 THE WITNESS: I'm aware of parallel
4 ITC case.

5 BY MS. LI:

6 Q. What do you know about that ITC case?

7 MR. HEFAZI: To the extent your only
8 understanding is based on communications
9 with attorneys, I'll caution you not to
10 reveal any kind of attorney-client
11 communications.

12 To the extent you have an
13 understanding outside of that, you may
14 answer.

15 THE WITNESS: Well, I can tell you
16 that the ITC case has not been involving my
17 expressed opinions in my declarations.

18 BY MS. LI:

19 Q. Anything else you can tell me about
20 the ITC investigation that you know?

21 A. No.

22 Q. Are you aware of GoPro's proposed
23 claim constructions in the ITC investigation?

24 (Reporter clarification.)

25 THE WITNESS: No. As I said, the

1 claim construction applied so that the
2 terms and words were used in their plain
3 and customary meaning, plus the board's
4 opinion about one particular wording.

5 BY MS. LI:

6 Q. So you're not aware of GoPro's
7 proposed claim constructions in the ITC
8 investigation, correct?

9 MR. HEFAZI: Objection to form.

10 THE WITNESS: As I said, I have
11 applied the construction that I just said,
12 basically plain and ordinary -- I'm sorry
13 -- plain and customary meaning of the terms
14 except for board's opinion on one
15 particular item.

16 BY MS. LI:

17 Q. Dr. Foroosh, just listen to my
18 question.

19 My question is, you're not aware of
20 GoPro's proposed claim constructions in the ITC
21 investigation, correct? It's a yes or no.

22 MR. HEFAZI: Objection. Asked and
23 answered. Also form.

24 THE WITNESS: I think I answered that
25 question.

1 And I said that no, I'm not aware.

2 And I did not apply any other claim
3 constructions in my opinions in my
4 declarations other than the ones that I
5 have pointed out, which is the plain and
6 customary meaning of the terms.

7 BY MS. LI:

8 Q. Are you aware of GoPro's infringement
9 allegations in the ITC investigation?

10 A. No.

11 Q. How would you feel if GoPro's proposed
12 claim constructions in the ITC investigation are
13 inconsistent with how you're applying the claim
14 constructions in the IPR proceedings for the '832
15 patent here?

16 MR. HEFAZI: So I'm just going to
17 object as to form and also object to the
18 extent that it mischaracterizes the record.

19 As you know, GoPro's proposing plain
20 and ordinary...

21 (Reporter clarification.)

22 MR. HEFAZI: Proposing plain and
23 ordinary in the ITC.

24 THE WITNESS: How do I feel? Is that
25 your question?

Page 22

1 BY MS. LI:

2 Q. Yes.

3 A. I'm not here to answer about my
4 feelings. I'm here to answer about my expressed
5 opinions in my declarations. And as I said, I
6 applied plain and customary meaning of the words
7 throughout my declaration.

8 Q. Do you think it's right if GoPro's
9 proposing claim constructions that are inconsistent
10 in its ITC investigation from your opinions about
11 claim construction in the IPRs?

12 MR. HEFAZI: Objection. Form.

13 THE WITNESS: As I said, I'm not aware
14 of the ITC case in terms of whether they
15 have applied the particular construction or
16 not or plain and customary meaning.

17 I'm saying that in forming my
18 opinions, I have applied what I declared in
19 my declaration, which is plain and
20 customary meaning of the terms.

21 BY MS. LI:

22 Q. You don't think it's important to
23 consider GoPro's claim construction positions in
24 the ITC investigation in forming your opinions for
25 the IPR?

1 MR. HEFAZI: Objection. Form.

2 THE WITNESS: My answer remains the
3 same. I'm just saying what I did. I'm
4 here to respond to your question regarding
5 my supplemental declaration.

6 And in my supplemental declaration and
7 original declaration, I have used plain and
8 customary meaning of the terms. Beyond
9 that, outside of that, I don't think
10 it's -- I'm here to respond to that. These
11 are hypothetical questions that you're
12 asking me.

13 BY MS. LI:

14 Q. Did you ever ask what are GoPro's
15 claim construction positions in its ITC
16 investigations?

17 A. I don't believe so. But again, it
18 doesn't matter. Because as I said, what I applied
19 -- I repeat -- was the plain and customary meaning
20 of the terms. No other claim construction.

21 Q. So you don't think it's important to
22 ask?

23 A. To ask what?

24 Q. GoPro's proposed claim constructions
25 or claim construction positions in the ITC

Page 24

1 investigation.

2 A. From my point of view, as an expert to
3 respond to the expressed opinions in my
4 declarations, I think what matters is that what I
5 applied in those declarations. I applied plain and
6 customary meaning of the terms, and I applied that
7 throughout my declarations.

8 Now, beyond that, I don't think it
9 matters to me. From my point of view, that's what
10 I mean. From my point of view, what matters is
11 that I consistently applied plain and customary
12 meaning of the terms throughout my declarations.

13 Q. So, outside of your declaration, you
14 don't think -- sorry. Strike that.

15 You don't think GoPro's claim
16 construction positions in the ITC investigation is
17 relevant to the declarations in the IPRs, correct?

18 MR. HEFAZI: And I'll just again
19 object to form to the extent it's
20 suggesting GoPro proposed something other
21 than the plain and ordinary.

22 THE WITNESS: Outside of my
23 declaration, I'm saying that I'm not here
24 to express a new opinion. I expressed my
25 opinions in my declarations.

1 And throughout my declarations, I
2 applied plain and customary meaning of the
3 terms. That's -- from my point of view,
4 that's what matters in terms of the
5 opinions that I have expressed in my
6 declarations.

7 BY MS. LI:

8 Q. And everything else that's not
9 mentioned in your declarations doesn't matter,
10 correct?

11 MR. HEFAZI: Objection. Form.

12 THE WITNESS: That's not what I said.

13 You know, in my declarations, I'm
14 referring to citing exhibits. So those, I
15 consider relevant.

16 But you're extending into another
17 hypothetical question now. I said -- I
18 mean, the original question -- correct me
19 if I'm wrong. My understanding was that
20 how would I feel about ITC case having a
21 different construction.

22 I would say my feeling doesn't matter.
23 What matters is that what I applied through
24 my declarations. And what I applied was
25 plain and customary meaning of the terms.

Page 26

1 BY MS. LI:

2 Q. You mentioned citing to exhibits in
3 your declaration, correct?

4 A. Can you repeat your question, please?

5 Q. You mentioned citing to exhibits in
6 your declarations, correct?

7 A. Yes, uh-huh.

8 Q. So if -- if there are documents that
9 are not cited in your declarations, then you don't
10 think that's relevant to your declarations,
11 correct?

12 A. What I'm saying is that I'm citing to
13 those declarations in support of my opinions. So,
14 in that -- in that sense, that those are the
15 exhibits that are relevant. I'm using, maybe even
16 citing portions of those exhibits.

17 Q. But you did not cite irrelevant
18 documents in your declarations, in your opinion,
19 correct? Let me rephrase.

20 So you will not cite documents that
21 you believe are irrelevant in your declarations,
22 correct?

23 A. Well, if I'm not citing to them, I'm
24 not relying in my opinion or opinions in my
25 declarations on those documents.

Page 27

1 Q. Because you find these are not
2 relevant to your declarations, correct?

3 A. That's incorrect. I'm just saying
4 that I did not consider them. Whether they're
5 relevant or irrelevant doesn't matter because I'm
6 saying that I did not consider other documents.

7 Wherever I'm citing any document,
8 those are the ones I'm using to express my
9 opinions.

10 Q. Is there anything relevant to your
11 declarations that you did not consider?

12 MR. HEFAZI: Objection. Form.

13 THE WITNESS: Again, this is a very
14 hypothetical question. If you refer to any
15 particular page or paragraph in my
16 declaration, we can discuss it.

17 If I'm referring -- if I'm citing a
18 particular exhibit, then I consider it that
19 that's -- you know, it's in support of my
20 expressed opinion, and that's why I'm
21 citing it.

22 BY MS. LI:

23 Q. Is there anything relevant to your
24 declarations that you did not consider?

25 MR. HEFAZI: Objection. Form.

1 THE WITNESS: I'm not clear about your
2 question. Can you rephrase that?

3 BY MS. LI:

4 Q. Is there any evidence that is relevant
5 to your opinions in your declarations that you did
6 not consider?

7 A. Well, it's more the other way around,
8 that the exhibits that I have cited are cited in
9 support of my expressed opinions.

10 Q. Understand. I'm not asking you the
11 other way around.

12 MR. HEFAZI: Please. Wait. Wait.
13 Wait. Please don't cut off the witness.

14 Dr. Foroosh, if you want to finish
15 your answer.

16 THE WITNESS: Yeah. And I was going
17 to continue and say that beyond those
18 exhibits, I'm not using any other exhibits
19 in support of my expressed opinions in my
20 declarations.

21 That's all I'm saying. I am saying
22 that I have expressed certain opinions in
23 my declarations. And wherever needed, I
24 cite exhibits that support my opinion.

25 BY MS. LI:

1 Q. Right.

2 For the -- any evidence that you did
3 not cite in your declarations, you don't find them
4 to be relevant to your opinions, correct?

5 MR. HEFAZI: Objection to form.

6 THE WITNESS: That question is very
7 hypothetical. I might not have not seen --
8 I might not have seen any other document.

9 But I think that's irrelevant in the
10 sense that my expressed opinion is based on
11 the exhibits that I have cited.

12 You're asking a very hypothetical
13 question. Are there tons of other
14 documents out there that might be relevant?
15 I don't know. I don't know the answer to
16 your question.

17 I'm here to answer about how I formed
18 my opinion. My opinion is based, of
19 course, on my technical knowledge and
20 know-how and plus the exhibits that I've
21 used to say that they're supporting my
22 opinions.

23 BY MS. LI:

24 Q. So sitting here today, is there any
25 evidence that you think is not cited in your

1 declarations but you believe is relevant that you
2 can identify?

3 MR. HEFAZI: I'm going to object as to
4 form.

5 THE WITNESS: Again, it's a
6 hypothetical question. Sitting here today,
7 is there something out there that I could
8 have considered, I should have considered?
9 I think that's completely irrelevant in the
10 sense that my opinions are expressed in my
11 declaration. And they're formed on the
12 basis of, as I said, my technical expertise
13 and the evidence that I present -- the
14 exhibits, basically, that I present -- or
15 rather evidence that I present in those
16 exhibits that I believe support my
17 opinions.

18 BY MS. LI:

19 Q. Okay. So there's no further evidence
20 that you'd like to identify today that's outside
21 the exhibits cited in your declaration, correct?

22 A. The answer remains the same. I formed
23 my opinions based on evidence that I have presented
24 in my declarations.

25 Q. There's no further evidence that you

1 would like to identify today?

2 MR. HEFAZI: Objection. Asked and
3 answered.

4 BY MS. LI:

5 Q. That's your opportunity. I'm just
6 asking you.

7 A. I'm answering. You know, my opinions
8 are formed based on the exhibits and documents that
9 I have cited in my declaration.

10 Q. And nothing further?

11 A. Well, it is what it is. My
12 declaration is there. If you refer to anything
13 there -- if it is in my declaration, I'm relying on
14 it.

15 Q. Dr. Foroosh, I'm asking you one more
16 time. Is there any evidence that you would like to
17 identify to me that's not cited in your
18 declarations today?

19 A. Again, that's a hypothetical question.
20 So the answer is that every evidence
21 that I'm relying on is cited in my declaration.

22 Q. Okay. Thank you.

23 Dr. Foroosh, you have experience with
24 cameras?

25 A. I do.

1 Q. Do you have any experience with
2 professional cameras?

3 A. What do you call a professional
4 camera?

5 Q. Do you understand what is professional
6 cameras versus what is not professional cameras,
7 like used by amateurs, for example?

8 A. You're asking a very general question.
9 What is your definition of a
10 professional camera? Did I express any opinion on
11 what is professional and not professional?

12 Q. Sitting here today, can you tell me,
13 do you know -- do you understand what is a
14 professional camera?

15 A. My answer is the same. Define
16 professional to me, and then I can answer your
17 question. What do you mean by "professional
18 camera"? What defines a professional camera for
19 you so I can say yes or no or...

20 Q. Have you heard of the phrase "amateur
21 cameras"?

22 A. Again, same answer. You know, define
23 amateur camera. You're asking a very general
24 question. I'm not sure if I offered any opinion
25 about amateur versus professional. If I have,

Page 33

1 please point me to the place in my declaration.

2 Q. So, you don't have an opinion in terms
3 of what is a professional camera versus what is an
4 amateur camera; is that right?

5 A. Point me to the place in my
6 declaration if I have expressed any opinion. Then
7 I would be more than happy to answer that question.

8 Otherwise, please tell me what is --
9 what do you call professional? What do you call
10 amateur?

11 Q. Sitting here today, can you tell me
12 what you understand about amateur cameras?

13 A. I think you're repeating the question
14 -- the same question again.

15 What do you mean by "amateur" or
16 "professional" for me to be able to answer? I want
17 to know what is your definition of amateur and
18 professional so I can say yes or no.

19 Q. You think you're a person of ordinary
20 skill in the arts, right?

21 A. Yes. I was --

22 Q. Go ahead.

23 A. And I was a person of ordinary skill
24 as of the priority date.

25 Q. So under that definition, as an

1 understanding from a skill in the art at the time
2 of the priority date of the patent --

3 (Reporter clarification.)

4 BY MS. LI:

5 Q. So we can resume, Dr. Foroosh.
6 What is the skill in the art's
7 understanding of an amateur camera?

8 MR. HEFAZI: Objection. Form.

9 THE WITNESS: Again, did I express any
10 opinion on that in my declaration? If so,
11 please point me to the right point. You
12 want me to give you a plain and customary
13 meaning of that. Did I express any opinion
14 on that?

15 BY MS. LI:

16 Q. You tell me.

17 A. No. I mean, you tell me where in my
18 declaration I'm expressing, and then I'll go over
19 that.

20 Q. Okay. So you cannot tell me, sitting
21 here today, what is -- what is an understanding of
22 a skill in the art of the term "amateur camera,"
23 correct?

24 A. That's not what I said.

25 I said that I did not -- I don't

1 remember expressing any opinion on that, amateur
2 versus professional. And if so, please point me to
3 the paragraph. Maybe it's my recollection. But
4 I'd be more than glad to go over that.

5 Q. I don't need you to point to your
6 declaration.

7 But sitting here today, I want to know
8 whether a skill in the art -- how a skill in the
9 art would understand the term "amateur camera."

10 MR. HEFAZI: Objection. Form.

11 THE WITNESS: Again, my answer remains
12 the same. If I have not expressed any
13 opinion on that, I have not expressed any
14 opinion on that.

15 BY MS. LI:

16 Q. Okay. Do you have any experience with
17 action cameras?

18 A. Do you mean by "action cameras" like
19 GoPro type of cameras?

20 Q. Yep. That could be one example.

21 A. Okay. Yes. I've used GoPro cameras
22 in some of my projects.

23 Q. And you worked on projects involving
24 GoPro cameras between 2012 and 2018, correct?

25 A. I -- I set the dates in my

1 declaration. But off the top of my head, I don't
2 remember. But if you are reading from my
3 declaration, so it must be correct.

4 Q. Yeah. I represent that you state in
5 your declarations that the time period is between
6 2012 and 2018.

7 A. Yes.

8 Q. So what types of GoPro cameras that
9 your projects involved?

10 A. You mean which specific models?

11 Q. Do you remember?

12 A. I don't remember which specific
13 models.

14 Q. What types of GoPro cameras in general
15 do you remember?

16 MR. HEFAZI: Objection. Vague and
17 ambiguous as to types.

18 THE WITNESS: What do you mean by
19 "type"? You mean which models? I'm not
20 sure what you mean by "type of GoPro
21 cameras."

22 BY MS. LI:

23 Q. So, what do you remember about the
24 GoPro cameras that you have used?

25 A. We used certain models. We looked at

1 what features were incorporated in those models.
2 That was the motivating point to choose those
3 models for us. And we used them for a project that
4 we needed to mount these cameras on an aircraft.
5 And so, basically an agile mobile platform, let's
6 say. And many of the features, we recognize were
7 in those models. We said yes, those are the ones
8 basically we are looking for.

9 Q. Okay. So do those GoPro cameras that
10 you used have wide angle lens?

11 A. I don't remember. I don't remember if
12 they did or they did not.

13 We were more interested in, first of
14 all, that cameras that could handle agile
15 scenarios. Secondly, certain aspects like certain
16 features, I would say, like hyper-smooth or horizon
17 alignment and things like that, were in my mind at
18 the time when we were considering GoPro.

19 Q. Can you explain a little bit more by
20 what you mean agile scenarios?

21 A. Well, it's an aircraft. So an
22 aircraft can be flown. In -- in a 3D space, you
23 have 6 degrees of freedom. An aircraft has 6
24 degrees of freedom. On top of that, you may have
25 vibrations on the wings and other places.

1 So by agile, I mean that the pilot
2 could have flown in not, you know, smooth fashion,
3 shall we call it. So the complete 6 degrees of
4 freedom in space or in the air.

5 Q. So those cameras were used on the
6 aircraft, correct?

7 A. Yes.

8 Q. And I just imagine like for cameras
9 used on the aircraft, would it be helpful to have
10 wide angle, you know, lenses because you need to
11 view the scene?

12 MR. HEFAZI: Objection. Form.

13 THE WITNESS: Not necessarily. No.
14 Because, first of all, we had -- it wasn't
15 a single camera. We actually networked
16 them on the airplane. So we used multiple
17 cameras, forward-looking, side, backward.

18 So, I don't believe that wide angle
19 was an issue. But I'm not saying that it
20 wasn't, we did not use. I just don't
21 remember. I don't remember whether we used
22 wide angle or not.

23 BY MS. LI:

24 Q. Okay. So let's go back to the action
25 cameras for a second. You understand that the

1 action cameras can have different types of lenses?

2 A. Which action camera are we talking
3 about? Are you talking about a specific one,
4 GoPro, a particular model?

5 Q. I'm talking about action cameras in
6 general. And you can point me to any specific
7 examples if you'd like.

8 But my question is, do you think
9 action cameras can have different types of lenses
10 or do you think it's just using one type of
11 specific lens?

12 A. Maybe. Maybe not. I think it depends
13 on the manufacturer's design, whether it takes --
14 accepts -- that's why I asked you, do you mean a
15 GoPro camera, a particular model? Maybe
16 some others can accept wide angle. Some don't.

17 Q. Okay.

18 A. I have not gone through every possible
19 action camera that is out there in the market. And
20 I definitely have not expressed any opinion on that
21 in any one of my declarations.

22 Q. So let's say GoPro. Like some GoPro
23 action cameras, they can have wide angle lens,
24 correct?

25 MR. HEFAZI: Objection to form.

1 THE WITNESS: Maybe they could. I
2 have not expressed any opinion on that.

3 BY MS. LI:

4 Q. And you wouldn't -- I mean, you just
5 stated in your testimony. You would agree with me
6 that a wide angle lens produces a distorted image,
7 correct, or video?

8 A. Can you repeat your question? I would
9 or I would not agree that -- what's your question
10 again?

11 Q. A wide angle lens would produce a
12 distorted image or video, correct?

13 MR. HEFAZI: Objection. Form.

14 THE WITNESS: That's a general
15 question. Yes, a wide angle camera would
16 introduce some non-linear distortions in
17 the output image.

18 BY MS. LI:

19 Q. What is horizon leveling?

20 A. Well, I think the best way is to go to
21 the patent and read it.

22 Q. And what is skill in the arts --
23 sorry. Strike that.

24 What is a person of ordinary skill in
25 the art's understanding of horizon leveling?

1 A. Again, we have to put it in the
2 context of the patent. So, I mean, I'm going to
3 read here through patent '832 abstract. When it
4 says a video -- this is page 1, abstract patent
5 '832, or Exhibit 1001.

6 It says: A video may be -- put my
7 glasses on.

8 It says, "A video may be captured by
9 an image capture device in motion. A
10 horizon-leveled view of the video may be generated
11 by providing a punchout of the video. The punchout
12 of the video may compensate for rotation of the
13 image capture device during capture of the video.
14 The placement of the punchout of the video may be
15 changed based on different rotational positions of
16 to provide a view in which a horizon depicted
17 within the video is leveled."

18 So that's what the abstract is saying.
19 It's saying that the horizon depicted within the
20 video is leveled. That's how the abstract refers
21 to it as punched out horizon-leveled video.

22 And then, of course, Claim 1 goes
23 over --

24 Q. Yeah. We don't need to go there yet.

25 MR. HEFAZI: Sorry. Please, please

1 don't interrupt the witness.

2 If you want to finish your answer.

3 MS. LI: I just have a follow-up.

4 MR. HEFAZI: If you want to finish
5 your answer.

6 You can't interrupt the witness. If
7 you want to withdraw the question, that's
8 one thing.

9 But if you want to finish your answer,
10 Dr. Foroosh.

11 THE WITNESS: Yes. So, again, the
12 claims themselves -- the claim language, it
13 says -- I'm going -- this is Exhibit 1001,
14 page 24, Claim 1.

15 In the middle of Claim 1 it says:
16 obtain rotational position information for
17 the video. The rotational position
18 information characterizing rotational
19 position of the image capture device as a
20 function of progress through the capture
21 rotation -- duration.

22 And then it goes on and says:
23 determine a viewing window for the visual
24 content as a function of the progress
25 through the progress length based on the

1 rotational positions of the image capture
2 device as the function of progress through
3 the capture duration. The viewing window
4 defining extents of the visual content to
5 be included within horizon -- through the
6 progress length wherein determination of
7 the viewing window includes determination
8 of a placement of the viewing window within
9 the field of view of the visual content as
10 the function of progress through the
11 progress length based on the rotational
12 positions of the image capture device as
13 the function of progress through the
14 capture duration.

15 And the next step says: generate the
16 horizon-leveled visual content based on the
17 viewing window, the horizon-leveled visual
18 content including a punchout of the extents
19 of the visual content defined by the
20 viewing window, wherein an inclusion of the
21 extents of the visual content defined by
22 the viewing window within the
23 horizon-leveled visual content -- excuse me
24 -- effectuates horizon leveling of the
25 visual content.

1 So -- and this matches what the
2 abstract says that I read earlier, which
3 says that the placement -- again back to
4 the abstract. The placement of the
5 punchout of the video may be changed based
6 on a different rotational position of -- to
7 provide a view in which a horizon depicted
8 -- in which a horizon depicted within the
9 video is leveled.

10 BY MS. LI:

11 Q. So, at the time of the priority of the
12 '832 patent, that's what a skill in the art would
13 understand what horizon leveling means, correct?

14 MR. HEFAZI: Objection. Form.

15 THE WITNESS: As I said, the word
16 "horizon-leveled" in the context -- we
17 cannot take the context out.

18 I mean, the context out of the '832
19 patent, a POSITA would understand it based
20 on the plain and customary meaning and the
21 disclosures of the patent, as I read in the
22 abstract and independent Claim 1.

23 BY MS. LI:

24 Q. So, if a camera is tilted, horizon
25 leveling will keep the video at a horizon level; is

1 that right?

2 A. What do you mean will keep the horizon
3 at the horizon level? What did you mean by that,
4 by keeping?

5 Q. You don't know the word "keep the
6 video at the horizon level"?

7 A. Well, your question is contradicting.
8 You're saying that -- it's contradictory. You're
9 saying that if the camera is tilted, then it keeps
10 what? It keeps the tilt as it is? Is that what
11 you're saying? Or is it -- would it correct it and
12 horizon level it? I'm confused about your
13 question.

14 Q. My question was, if a camera is
15 tilted, and if the camera has a horizon-leveling
16 function, it will try to keep the video at the
17 horizon level, correct?

18 A. If a camera is tilted, it would
19 correct that so that the horizon is leveled.

20 Q. Okay.

21 A. Not keep. I --

22 Q. Okay.

23 A. From my point of view, keeping means
24 that not touch. That's what I call plain and
25 customary.

1 Q. Okay. Fair.

2 A. So it would adjust it to level the
3 horizon as expressed in the abstract.

4 Q. Okay. Yeah. I'm just trying to
5 understand.

6 So horizon leveling means to like
7 compensate for the tilting of the camera, correct?

8 A. Tilt implies 1 degree of freedom. And
9 I think it goes beyond just 1 degree of freedom in
10 that -- you know, even as I read in the claim. So
11 it says "rotation." Tilt is a special case of
12 rotation.

13 Q. Okay.

14 A. But overall, you're kind of on the
15 right track in the sense that it compensates for
16 the rotation, among other things that are disclosed
17 in Claim 1, to output an image that is
18 horizon-leveled.

19 Q. Okay. Yeah. So just help me
20 understand. You said tilting. It refers to a
21 rerotation. Does that tilting refer to rotation
22 around the horizontal axis?

23 A. That's a very good question. I mean,
24 you're asking me a general question.

25 So in the 3D space, we have three

1 possible rotation angles. And depending on the
2 convention used, it could be any one of those
3 angles. But it's referring to one angle for tilt.
4 If you say just tilt, then it would refer to one
5 angle.

6 But here, as I read, the -- the patent
7 is general. It's talking about rotation. It
8 doesn't just say "tilt." It says the rotation of
9 the camera is measured by some sensors and then
10 horizon leveling is applied.

11 MR. HEFAZI: And Lily, we're
12 approaching 11:00. So whenever it's good
13 for a short break.

14 MS. LI: Yeah. Actually, we can --
15 why don't we take a break now. Would you
16 like a short break?

17 MR. HEFAZI: Yeah. It's been about an
18 hour.

19 MS. LI: Yeah. Yeah. It's fine. Why
20 don't we take that short break,
21 Dr. Foroosh.

22 THE WITNESS: Sure.

23 (A brief recess was taken from
24 10:58 a.m. to 11:11 a.m.)

25 BY MS. LI:

1 Q. Welcome back.

2 A. Thank you.

3 Q. Have you discussed with counsel about
4 any substance of your testimony?

5 A. No.

6 Q. All right. Why don't we go back to
7 the '832 patent, Exhibit 1001, Dr. Foroosh. Let's
8 look at Figure 6A to 6C.

9 (Reporter clarification.)

10 THE WITNESS: Yes.

11 BY MS. LI:

12 Q. And these figures illustrate example
13 zoom curves, correct?

14 A. I don't believe I have expressed any
15 opinion on these -- on these figures.

16 Q. You have no opinions on Figures 6A, 6B
17 and 6C; is that correct?

18 A. I did not express any opinion on that
19 in my declaration. Unless, you know, my
20 recollection is wrong. If you refer to my
21 declaration, where in my declaration am I referring
22 to those figures? Please point this out to me.

23 Q. Let's look at -- I'll walk you through
24 that. Let's look at column 18, line 11 to 12.

25 A. Yes.

1 Q. You see that it states -- for example,
2 Figure 6A illustrates an example zoom curve 600.

3 Do you see that?

4 A. Yes.

5 Q. Okay. Follow me along.

6 And then let's look at column 18, same
7 column, line 29 to 37.

8 A. Yes.

9 Q. It states, "The size of the viewing
10 window may increase with decrease in zoom" -- do
11 you follow me?

12 A. I see that. Yes.

13 Q. "The size of the viewing window may
14 decrease with increase in zoom."

15 Yeah? Do you follow me?

16 A. I see that. Yes.

17 Q. "Using the zoom values of the zoom
18 curve may result in pronounced, (e.g., rapid,
19 jittery,) changes in zoom/viewing window size
20 within the horizon-leveled visual content."

21 Do you see that?

22 A. Yes.

23 Q. Okay. So this is describing the
24 example zoom curve in Figure 6A, correct?

25 A. Yes.

1 Q. And it describes the example zoom
2 curve in Figure 6A as jittery.

3 Do you see that?

4 A. It mentions the word "jittery." Yes.
5 Example, rapid, jittery.

6 Q. Right.

7 So this patent discloses simulating
8 the zoom was rapid or jittery changes, correct?

9 A. Which claim are you referring to?

10 Q. I'm not talking about the claim. I'm
11 just talking about, you know, the specification
12 we're looking at right now.

13 It describes the simulating the zoom
14 was rapid or jittery changes as shown in the
15 example Figure 6A, correct?

16 MR. HEFAZI: Objection to form.

17 THE WITNESS: Where does it say
18 simulating?

19 BY MS. LI:

20 Q. Do you understand what simulating
21 means?

22 A. Well, it's not -- I didn't see the
23 word "simulating" in any one of these.

24 What do you mean by "simulating"?

25 Q. What is your understanding, as a

1 person of ordinary skill in the art, of simulating
2 the zoom?

3 A. That, I have not expressed any opinion
4 on that in my declaration.

5 Q. Okay. So, let me change the question.
6 So, we're looking at this example in
7 Figure 6A and then the paragraph that I just asked
8 you to look at. It's not talking about a smooth
9 zoom curve, correct?

10 It talks about the zoom curve being
11 rapid or jittery, correct?

12 A. It says "rapid" or "jittery" as
13 examples.

14 Q. Got it.

15 Now, let's also look at the '832
16 patent at column 19, line 51 to 54.

17 A. Can you repeat those lines to me?

18 Q. 51 to 54.

19 A. 51 to 54. Yes.

20 Q. Do you see that it describes as
21 follows: Horizon-leveled visual content with zoom
22 that follows the rotation of the image capture
23 device may be generated based on the use of a
24 non-modified zoom curve, (the zoom curve 600).

25 A. I see that.

1 Q. Do you see that?

2 A. I see that.

3 Q. Okay. So again, the patent talks
4 about this -- you know, it can use the zoom curve
5 600 as shown in Figure 6A, right?

6 A. Yes. It discloses that in that
7 paragraph.

8 Q. Okay. And you didn't cite that
9 portion or mention that in your declarations,
10 correct?

11 MR. HEFAZI: Objection. Form.

12 THE WITNESS: Again, I don't remember.
13 If you refer to the particular place where
14 I'm referring to that, please show me in my
15 declaration.

16 BY MS. LI:

17 Q. Okay. I represent to you that's not
18 cited or mentioned in your declaration.

19 MR. HEFAZI: And I'll object to the
20 extent we don't have availability to verify
21 that representation.

22 BY MS. LI:

23 Q. All right. Let's go to column 18,
24 line 66.

25 A. Yes.

1 Q. Do you see that it states, "In some
2 implementations, the viewing window may be
3 determined to have smoothed changes"?

4 Do you see that?

5 (Reporter clarification.)

6 THE WITNESS: I see that.

7 BY MS. LI:

8 Q. So the patent states that in some
9 implementations, the viewing windows may be
10 determined to have smoothed the changes, right?

11 A. It says what it says.

12 It says, "In some implementations, the
13 viewing window may be determined to have smoothed
14 changes."

15 Q. And --

16 A. May I continue? But the sentence
17 continues, of course.

18 Q. Yes. Yes.

19 A. So, you know, maybe we need to read
20 the rest of the sentence also.

21 It says, "in the maximum size of the
22 viewing window allowed as the function of progress
23 through the progress length."

24 So just to make sure that we read the
25 rest of the sentence to put it into context.

1 Q. Okay. Now, let's look at the last
2 sentence of the same paragraph. Column 19, lines
3 12 to 15.

4 Do you see that it states: Rather
5 than simulating a constant zoom or a zoom with
6 pronounced (e.g., rapid, jittery) changes, the
7 smoothing of the changes in the maximum sizes may
8 simulate zoomed -- sorry -- smoothed/gradual
9 changes in zoom.

10 Do you see that?

11 A. I see that.

12 Q. What does simulate mean to a skill in
13 the art?

14 A. Again, I answered that question
15 earlier.

16 I did not express any opinion on the
17 meaning of the -- simulate for a POSITA as of the
18 priority date of the patent. I did not express any
19 opinion on that.

20 Q. Does simulate mean smooth?

21 A. My answer remains the same. I did not
22 express any opinion on that in my declaration. If
23 I have, please show me where in my declaration
24 I'm -- I'm expressing any opinion on the word
25 "simulate."

1 Q. So, it is not your opinion that
2 simulate changes in zoom means a smoothed zoomed
3 curve, correct?

4 A. I did not any express -- I mean, I did
5 not express any opinion on that in my declaration.

6 Q. Do you have any opinion now?

7 A. I remain with my opinions in my
8 declarations. And it requires me to read and
9 consider within context and all of that.

10 I'm not going to express an opinion on
11 the fly like this. But, I did not express any
12 opinion on the word "simulate" in my declarations.
13 If not, please refer -- if there is a place in my
14 declaration where I refer to that, then I would be
15 more than glad to discuss it.

16 Q. Let's look at Claim 8 in the '832
17 patent.

18 A. That's column 29, I assume?

19 Q. Correct.

20 A. Line 25?

21 Q. Yes.

22 So it reads -- just for the record,
23 Claim 8 recites: The system of Claim 7, wherein
24 the size of the viewing window changes as the
25 functional progress through the progress length to

1 simulate changes in zoom for the visual content.

2 Do you see that?

3 A. Yes.

4 Q. And you don't have an opinion as to
5 what simulate changes in zoom mean?

6 A. It says that the system of Claim 7
7 wherein the size of the viewing window changes as
8 the function of progress through the progress
9 length to simulate changes in zoom for the visual
10 content.

11 Yeah. So I can see that I had
12 expressed opinion on Claim 8 and saying that Claim
13 8 is not supported by the combinations provided.
14 That's what I was saying, that please refer to me
15 -- I mean please refer me to my declaration so I
16 can put it in the context.

17 Q. Yeah. We'll do that. But let's stay
18 here with Claim 8 for a minute.

19 The word "smoothed" does not appear
20 anywhere in the claims, correct, in Claim 8?

21 A. The system of Claim 7 -- I'm reading
22 for myself.

23 The word "smoothed" does not appear
24 there.

25 Q. Let's go to Figure 5C of the '832

1 patent.

2 A. Is that page 7 of Exhibit 1001?

3 Q. Correct.

4 Do you see that Figure 5C shows
5 viewing window 510?

6 A. I see that.

7 Q. And that is marked -- there's a kind
8 of an arrow that marks a viewing window 510 on the
9 left, and there's a viewing window 510 on the
10 right, correct?

11 A. Correct.

12 Q. So let's look at the viewing window on
13 the left side for a second. Is the viewing window
14 on the left at the center of the grayed area?

15 A. In this picture, it appears to be at
16 the center of the gray area.

17 Q. And just for the record, to be clear,
18 by grayed area, I mean the box labeled as 532.

19 A. Correct.

20 Q. On the right-hand side is the viewing
21 window 510 also on -- at the center of the bigger
22 box 534?

23 A. In this particular example that you're
24 pointing out in Figure 5C, it appears -- it appears
25 to be at the center of that box 534.

1 Q. And let's go to column 20, line 51 to
2 54.

3 A. Yes.

4 Q. It states, "In some implementations,
5 the location of the viewing window may be changed
6 as a function of progress through the progress
7 length to simulate panning in the horizon-leveled
8 visual content."

9 Do you see that?

10 A. Yes.

11 Q. So, the '832 patent describes that in
12 some implementations, the location of the viewing
13 window may be changed, correct?

14 A. That sentence says what it says. Yes.

15 Q. And it does not say the location must
16 change for different frames, correct?

17 A. Well, let's look at the plain claim
18 language. Let's look at Claim 10. It says: The
19 system of Claim 1, wherein the determination of the
20 placement of the viewing window within the field of
21 view of the visual content includes determination
22 of a location of the viewing window within the
23 field of view of the visual content, the location
24 of the viewing window within the field of view of
25 the visual content, determining framing of the

Page 59

1 visual content.

2 So, placement, from my point of view,
3 means that the XY location of the -- and that's the
4 plain claim language.

5 Q. Okay. That's your opinion?

6 A. Well, it is my opinion. But it's the
7 plain claim language saying that the system of
8 Claim 1 is exercising that. That wherein the
9 determination of the placement of the viewing
10 window within the field of view of the visual
11 content includes determination of the location of
12 the viewing window within the field of view, et
13 cetera.

14 Q. Okay. Let's go back to where we were
15 for a second in the specification.

16 A. Where were we? Can you point me?

17 Q. Yeah. Column 20, line 51 to 54.

18 A. Column 20, line 51 to 54.

19 Q. Yeah.

20 A. Yes.

21 Q. Just for the sentence we just read.
22 It does not say the location must change for
23 different frames, correct?

24 A. Again, it says what it says. But as I
25 said, the plain claim language of Claim 10 is

1 saying that the system of Claim 1, it includes
2 determination of the placement of the viewing
3 window.

4 Q. That's nonresponsive to my question.
5 Just stay with me at column 20, line 51 to 54.

6 We're talking about this sentence that
7 we just read. And it does not say the location
8 must change for different frames, correct?

9 A. I did answer that question.

10 I said that sentence does not say
11 must. You're correct. The word "must" does not
12 appear there. But, as I -- again, I'm pointing
13 back to Claim 10. Claim 10 says what it says. And
14 I read it. It says that the -- you know, the
15 system of Claim 1 includes the placement of the
16 viewing window.

17 Q. Uh-huh. In your opinion, does the
18 location, as recited in Claim 10, of the viewing
19 window must change for different frames?

20 A. Well, let's read that again. It says
21 that the system of Claim 1, wherein the
22 determination of the placement of the viewing
23 window within the field of view of the visual
24 content includes determination of the location of
25 the viewing window within the field of view of the

1 visual, the location of the viewing window within
2 the field of view of the visual content determining
3 the framing of the visual content.

4 So because it refers to system of
5 Claim 1, is as a function of -- first of all, it
6 says "determination of the placement." I mean, if
7 the placement is fixed, what are you determining?

8 Secondly, I mean, that's -- I think
9 the POSITA would understand it that way.

10 Secondly, it says "the system of Claim
11 1." And the system of Claim 1, it says that the
12 viewing window -- here. Determine a viewing window
13 for the visual content as a function of progress
14 through the progress length based on the rotational
15 position, et cetera.

16 So it says "as a function of the
17 progress through the progress length." For me, as
18 the function of progress for progress lengths and
19 as also confirmed by the board, I believe, is a
20 frame-by-frame determination.

21 So Claim 10 is the system of Claim 1
22 that is dealing with the placement. So it has to
23 be also -- I mean, my understanding is that as a
24 function of the progress through the progress
25 length.

1 Q. Uh-huh. And just for the record,
2 that's the board's construction of the term
3 "determining a viewing window for the visual
4 content as a function progress through the progress
5 lengths means determining a viewing window for
6 different times of the video," correct?

7 A. That's -- yeah. I mean, it could have
8 been easier if I could read through my declaration.
9 But that's to my recollection, correct.

10 Q. Yeah. I represent -- I'll represent
11 that's the board's construction.

12 And do you agree with the board's
13 construction?

14 A. Yes.

15 MR. HEFAZI: And I'm just going to
16 object to the extent that your
17 representation is inaccurate in any way. I
18 don't have the decision in front of me.

19 (Reporter clarification.)

20 MR. HEFAZI: Inaccurate in any way. I
21 don't have the decision in front of us.

22 MS. LI: Yeah. I'm just reading from
23 the initial determination at page 21.

24 THE WITNESS: What was your question?

25 BY MS. LI:

1 Q. Yeah. We were just laying out -- just
2 for the record, that's the board's construction.

3 And do you think the board's
4 construction for this term require that the viewing
5 window changes for different frames?

6 A. Well, that's what the board says. It
7 says that it is -- I mean, please read that again.
8 Even if that's inaccurate, based on the objection
9 -- but even if you read that, that says that, yeah,
10 it's determined at different times. If it's fixed,
11 why would you determine it at different times?

12 And besides that, as I said, reading
13 through Claim 10 and that system of, you know --
14 system of Claim 1, it says "as a function of the
15 progress through the progress length." That means
16 that it's saying that it's changing as a function
17 of it. It depends on that.

18 If the placement depends on the
19 progress and the progress length, it's -- it's --
20 the POSITA would understand that it's varying at
21 different times, as the board suggested also.

22 Q. So just to unpack this a little bit.

23 You believe that the board's
24 construction for the term, which is determining of
25 viewing window for different times of the video,

1 actually requires that the viewing window changes
2 for different frames or different times, correct?

3 MR. HEFAZI: Objection. Form.

4 BY MS. LI:

5 Q. I'm just trying to understand.

6 A. That's not what I said. I said that I
7 applied the board's construction. And I say that
8 I'm reading through Claim 10, which is saying --
9 referring to the system of Claim 1. And based on
10 that, applying the board's construction and reading
11 Claim 10 to Claim 1, that's what a POSITA would
12 have understood as of the priority date, that the
13 placement is a function of the progress through
14 time and the progress length.

15 Q. Does that require the placement to
16 change?

17 A. Well, that's -- I'm saying that I'm --
18 my opinion is that, yes. If something is a
19 function of the progress length, then it depends on
20 that. That's the definition of a function of --
21 you know. So, otherwise, it's not a function of
22 that. The placement is independent. I mean, this
23 is -- that's not what Claim 10 and Claim 1 are
24 teaching us.

25 Q. But the board's construction does not

1 use the word "change," correct? There's nowhere --
2 the change -- the word appears nowhere in the
3 board's construction?

4 A. I cannot answer that question because
5 I don't remember off the top of my head -- unless
6 you produce a document and show me what exactly the
7 board said.

8 But what I said, that I applied that
9 construction. And reading through Claim 10, which
10 says that the viewing window within the field of
11 view of the visual content includes the
12 determination of the location of the viewing
13 window.

14 And then when you go to Claim 1, it
15 says that the viewing window is a function of the
16 progress through the progress length.

17 So when we say view -- something is a
18 function of some other variable, it means that it
19 changes with it. It's -- it's dependent on it. So
20 if it's -- otherwise, I don't see any point why
21 Claim 1 is spelling it out in one of the steps. It
22 says that it is a function of progress through the
23 progress. Otherwise it wouldn't be a function of
24 that. It would be independent of it.

25 Q. I'm reading your supplemental

1 declaration, paragraph 30 -- sorry -- 83 where you
2 said: The board construed the determining of
3 viewing window limitation as requiring determining
4 of a viewing window for different times of the
5 video.

6 A. Can you please tell me which paragraph
7 of my supplemental?

8 Q. We're looking at Exhibit 2021.

9 A. Yes.

10 Q. In paragraph 83.

11 A. 83? Yes.

12 Q. So the first sentence, "The board
13 construed the determining a viewing window
14 limitation as requiring determining a viewing
15 window for different times of the video."

16 Do you see that?

17 A. Yes.

18 Q. My question is, this construction from
19 the board does not use the term "change," correct?

20 A. Again, my answer remains the same. I
21 think your question -- original question was that
22 does it change. And I said that let's read through
23 Claim 10 and Claim 1 -- independent Claim 1,
24 applying this construction.

25 Applying this construction to Claim 10

1 and Claim 1 tells a POSITA that it's changing.
2 Otherwise, it wouldn't be a function of progress
3 through progress length.

4 Q. Yeah. But my question is, just
5 reading the precise construction that the board
6 did, which is requiring determining of viewing
7 window for different times of the video, the word
8 "change" appears nowhere in this construction from
9 board, correct?

10 A. I mean, I don't think the board
11 expressed an opinion on that change either way.

12 But what I'm saying is that reading
13 through the claim -- the plain claim language,
14 applying the board's construction, it clearly says
15 that yes, it's a function of progress; therefore,
16 it's changing as a function of progress through the
17 progress length.

18 I do not think the board expressed any
19 opinion on the change aspect one way or the
20 another. It just -- I'm saying that applying that
21 construction to claims telling the POSITA that the
22 placement is a function of progress through the
23 progress length.

24 And if viewing window placement is a
25 function of progress through progress length, as

1 the plain claim language is stating, then it is
2 changing as a function of progress over progress
3 length.

4 Q. Just so I understand. So you're
5 saying the board's construction doesn't say whether
6 that required the viewing window to change or not
7 one way or the other. But your understanding or
8 your opinion, based on ordinary skill in the art,
9 believe that this construction requires the viewing
10 window to change over time, correct?

11 MR. HEFAZI: Objection. Also vague
12 and ambiguous.

13 MS. LI: Counsel, can you just
14 restrict to --

15 MR. HEFAZI: Objection to form and
16 vague and ambiguous.

17 MS. LI: Please just restrict your
18 objection to form only.

19 MR. HEFAZI: Objection to form.

20 THE WITNESS: Okay. Let's read
21 paragraph 83 of my declaration.

22 Again, I say, "As I discussed above,
23 the board construed that determining a
24 viewing window limitation as requiring
25 determining a viewing window for different

1 times of the video."

2 So, you are suggesting that the board
3 is saying that it's not changing. And I
4 disagree with that. So if it is determined
5 at time T1 and it's requiring that it has
6 to be determined also at time T2 and T3 and
7 so on and so forth, I'm saying that it's
8 clear to me that that construction and
9 reading through the claims means that it's
10 a function of progress over progress
11 length.

12 And I believe that, yes, it is my
13 opinion that the board's construction --
14 even the word "change" doesn't -- may not
15 appear there. I don't have the complete
16 board -- I'm just relying on my declaration
17 here. Even if the word "change" may not
18 appear -- or maybe it does. I don't know.
19 I don't see the board's decision in front
20 of me.

21 But regardless of that, because it's
22 saying that at different times. So I think
23 a POSITA would understand that why would
24 you be defining the time T1 and then still
25 go and determine? It's determined once

1 it's determined.

2 BY MS. LI:

3 Q. Uh-huh.

4 A. So if it's not changing, why do we
5 need to determine it at different times.

6 So no, I disagree with you completely
7 in the sense that the board -- again, I don't see
8 the exact document of the board's decision. But I
9 think the board's decision also implies
10 frame-by-frame determination of the placement.

11 Q. Right.

12 But just so I understand, your
13 position is that the board's construction required
14 that the viewing window changes for different times
15 of the video, correct?

16 MR. HEFAZI: Objection. Form.

17 THE WITNESS: That's not what I said.

18 I said Board's -- reading through that, the
19 board is saying that determining a viewing
20 window for different times of the video.

21 BY MS. LI:

22 Q. Does it require the viewing window to
23 be changed?

24 A. Require? No. I'm saying the
25 requirements are -- I mean the limitations are

Page 71

1 coming from the plain claim language. The plain
2 claim language, it's saying in Claim 10 that the
3 placement in Claim 1 which depends on -- which is a
4 function of progress through progress length.

5 If something -- as I said, if one
6 variable is a function of another variable, it
7 means that it depends on it. It changes with it.
8 Depends means it changes with the changes in the
9 other one.

10 So, I believe my interpretation of the
11 claims 10 and 1 are consistent completely with the
12 board's decision.

13 Q. Okay. I think I understand what
14 you're saying. But just bear with me.

15 Because the board's construction of
16 the term is -- the term that the board construed is
17 determining a viewed window for the visual content
18 as a function of the progress through the progress
19 length. Okay?

20 The board construed that term, which
21 already included the function progress that you
22 were talking about.

23 Then the board says, Okay, this term
24 means determining a viewing window for different
25 times of the video.

1 You with me?

2 A. Yes.

3 Q. Yeah.

4 So your opinions, just so I
5 understand, is saying this whole phrase, including
6 the function of progress through the progress
7 length as construed by the board, requires that the
8 viewing window changes for different times of the
9 video, correct?

10 MR. HEFAZI: Objection. Form.

11 THE WITNESS: Well, again, so not only
12 the plain claim language. I'm saying that
13 even the specifications support that the
14 viewing window is a function of progress
15 through progress length.

16 And claim -- specifically Claim 10
17 that we were looking at is talking about
18 the placement of it and other claims
19 talking about the rotation of it or the
20 size or shape of it. Even specifications
21 talk about that.

22 So it's a function of the size, shape,
23 placement is determining per frame, and
24 it's a function of that progress. If it's
25 a function of that progress, it implies

Page 73

1 changing through the progress of the video.

2 BY MS. LI:

3 Q. Does the -- let's unpack this a little
4 bit.

5 Does the size of the viewing window
6 has to change at different times?

7 A. Has to change?

8 Q. Yeah.

9 A. I mean, I don't believe the
10 requirement is that it has to change. But it
11 says that -- so let's have a look at the
12 requirement of the size.

13 Okay. So Claim 7, it says: The
14 system of Claim 1, wherein the determination of the
15 viewing window -- this is Claim 7 of Exhibit 1001.

16 So Claim 7, again, I read from the
17 starting point. It says: The system of Claim 1,
18 wherein the determination of the viewing window
19 further includes the determination of a size of the
20 viewing window as a function of progress through
21 the progress length based on the rotational
22 positions of the image capture device as the
23 function of progress through the progress [sic]
24 duration.

25 So it says that the size of the

1 viewing window is a function of progress through
2 the progress length. So that means that it's
3 changing as a -- as a -- you know, over time, at
4 different times.

5 Q. Okay. So, your opinion is that Claim
6 7 requires that the size of the viewing window
7 changes over time, right?

8 A. What do you mean by "requires"? I
9 mean, I'm -- I read -- it says what it says.

10 Q. Or means. You know, I don't want
11 to -- ask -- or whatever.

12 The Claim 7 says that -- in your
13 opinion says that the size of the viewing window
14 changes over time?

15 A. Yeah. I'm saying that not only Claim
16 7 says that. Specification seems to make it clear
17 that the size, shape, rotation and placement are a
18 function of the progress over progress length. So,
19 which means that they are changing.

20 Q. Okay. Let's unpack this a little bit.
21 So, we talk about the size changes
22 over time. Is that all your opinion that the
23 location of the viewing window also changes over
24 time in Claim 1 or 10?

25 MR. HEFAZI: So, objection. Form.

1 THE WITNESS: Again, so the
2 placement -- I believe that this is my
3 opinion. The placement is understood as
4 the XY location.

5 So if Claim 10 is saying that the
6 system of Claim 1, wherein the
7 determination of the placement of the
8 viewing window within the field of view of
9 the visual content includes determination
10 of the location of the viewing window
11 within the field of view of the visual
12 content, the location of the viewing window
13 within the field of view of the visual
14 content determining framing of the visual
15 content.

16 So, that location, from my point of
17 view, is the XY coordinates of the viewing
18 window, which it says that that applies the
19 system of Claim 1. And system of Claim 1
20 clearly says that that is a function of
21 progress over progress length.

22 BY MS. LI:

23 Q. Which you think requires the location
24 to change over time, correct?

25 MR. HEFAZI: Objection. Form. Vague

1 and ambiguous.

2 MS. LI: Counsel, can you please stop
3 the --

4 MR. HEFAZI: I'm simply --

5 MS. LI: -- speaking objections. Just
6 say form. Okay?

7 THE WITNESS: So again, I don't
8 understand why your word of requiring. I'm
9 saying that this is stating what it says.
10 And I mentioned that area. So what do you
11 mean by "requiring"? It says that
12 placement --

13 BY MS. LI:

14 Q. Okay. Let me address it because you
15 didn't understand my question. Let me rephrase my
16 question.

17 So you think that the claims mean that
18 the location has to change over time, correct?

19 MR. HEFAZI: Same objection. Form.

20 THE WITNESS: Again, you say "has to."

21 BY MS. LI:

22 Q. So it doesn't have to?

23 A. Well, I'm not saying that it says
24 either way. I'm saying that it states what it
25 says. I mean, I can read again.

Page 77

1 It says that system of Claim 1 -- the
2 XY location of the viewing window which defines the
3 framing of the visual content is a function of
4 progress over progress time.

5 It says that is a function of that.

6 Q. So that means the location of the
7 viewing window changes over time?

8 A. It means that the location -- with
9 Claim 10, it says that the location of the viewing
10 window that -- for the systeming of Claim 1 would
11 be changing over time -- the XY location in Claim
12 10 is just referring to the placement. So, the XY
13 location would be a function of progress over
14 progress time.

15 Q. So if the location of the viewing
16 window does not change over time, it does not mean
17 the claim language, correct?

18 MR. HEFAZI: So again, objection to
19 form.

20 THE WITNESS: No. I disagree with
21 that also because it doesn't mean that
22 either way -- it meets both of them.

23 So, the claim language is -- you know,
24 Claim 10, in a sense, is broader. It meets
25 both cases. You know, whether it changes

1 or not, it meets it. So, but changing is
2 there also. That's what I'm saying.

3 BY MS. LI:

4 Q. Okay. So, if the location of the
5 viewing window doesn't change, does that meet the
6 claim or not?

7 A. Which claim? Claim 10?

8 Q. Yes.

9 A. Well, Claim 10 is saying that the
10 location, the placement, location is a function of,
11 you know, progress over time of the progress
12 length.

13 So, I'm saying that that doesn't limit
14 it. But it says that it's changing. Yeah, it
15 states that it's a function of the progress over
16 progress length. If it's a function of that, it's
17 changing with that.

18 Q. So, if the location doesn't change,
19 then, in your opinion, it doesn't satisfy Claim 10
20 because it doesn't change the location?

21 MR. HEFAZI: Same objection. Form.

22 THE WITNESS: I'm not sure if I
23 understood your question. What is your
24 question?

25 BY MS. LI:

1 Q. If the location of the viewing window
2 does not change, it does not meet Claim 10; is that
3 right?

4 MR. HEFAZI: Objection. Form.

5 THE WITNESS: If the location or
6 placement of the window is not a function
7 of progress, then it does not meet Claim
8 10. I put it in those terms.

9 So here, it says that in Claim 10, the
10 placement or location of system in Claim 1.
11 And system in Claim 1, it says that is a
12 function of progress over time.

13 BY MS. LI:

14 Q. Okay. So if the location of the
15 viewing window does not change over time, then it
16 does not meet the Claim 10 language, correct?

17 A. Again, it says what it says. It says
18 that Claim 10 is referring to system in Claim 1.
19 And it says that the location of the viewing window
20 within the field of view of the visual content
21 determining framing of the visual content. And it
22 says for the system of Claim 1. And system of
23 Claim 1, it says that is a function of progress
24 over progress length.

25 I'm just reading the plain claim

1 language and saying that it says that it's a
2 function of the placement -- or the location is a
3 function of progress over progress length.

4 Q. So --

5 A. May I finish?

6 Q. Go ahead.

7 A. So I interpret this that Claim 10 is
8 telling us that the location is changing over time.
9 And it's a function of progress and the progress
10 length based on the system of Claim 1.

11 Q. So if the prior art's viewing windows
12 location does not change, it does not meet Claim
13 10, in your opinion, correct?

14 MR. HEFAZI: Objection. Form.

15 THE WITNESS: Again, so this is
16 getting more general. You're talking about
17 hypothetical -- which prior art are we
18 talking about?

19 You know, so I cannot answer your
20 question based on some prior art. Tell me
21 which prior art we are talking about that I
22 have referred to in my declaration.

23 BY MS. LI:

24 Q. It's a simple question about -- I'm
25 just trying to understand, you know, your opinion.

1 Like, if the viewing window's location
2 does not change, you would agree with me that in
3 your opinion, it does not satisfy Claim 10,
4 correct?

5 MR. HEFAZI: Objection. Form.

6 BY MS. LI:

7 Q. It's a very simple question.

8 A. No, it's not. You're asking a
9 hypothetical question. You're saying that a prior
10 art. Which prior art are we talking about?

11 Q. I --

12 A. No, can I finish my sentence, please?
13 Can you tell me which prior art are
14 you referring to? And I will be more than glad to
15 answer that.

16 Q. My question does not refer to any
17 prior art. Just listen.

18 If the location of the viewing window
19 does not change, it does not meet Claim 10 in your
20 opinion, correct?

21 MR. HEFAZI: Objection. Form.

22 THE WITNESS: That's not -- to my best
23 recollection, that's not what you asked me.

24 You said that if -- I'm paraphrasing.
25 If a prior art, the location - in a prior

1 art, the location does not change, then it
2 doesn't meet that. I think -- I believe
3 that that's what you asked me. And I said
4 which prior art are we talking about.

5 BY MS. LI:

6 Q. I'm asking a current question.

7 A. Okay.

8 Q. I withdraw the other question.

9 So the current question -- please
10 listen carefully -- is if the location of the
11 viewing window does not change, it does not meet
12 Claim 10 in your opinion, correct? Yes or no?

13 MR. HEFAZI: Objection. Form.

14 THE WITNESS: Well, again, tell me
15 which prior -- which -- which -- where in
16 my declaration I'm, you know, talking about
17 that. I will be more than glad to refer to
18 that.

19 It is true that some prior arts
20 deal -- that determine it once and then
21 just use -- it's centered, for instance.
22 Then it doesn't -- I express my opinion in
23 my declaration that it's always at the
24 center. It is not changing. So this is
25 not at least satisfying Claim 10.

1 But again, you're asking me to respond
2 to a broad question. Which prior art are
3 we talking about?

4 BY MS. LI:

5 Q. I'm not asking any prior art at this
6 moment. Okay?

7 My question is -- and we can, you
8 know, keep going on this.

9 A. Sure.

10 Q. It's a simple yes or no question.

11 And you, as an expert in this IPR
12 proceeding, are you going to be able to answer this
13 question?

14 MR. HEFAZI: Objection. He's
15 answered.

16 MS. LI: Please let me finish my
17 question.

18 MR. HEFAZI: Wait. Lily, your tone is
19 starting to get very frustrating with him,
20 and it's starting to get argumentative. So
21 let's tone it down a little bit.

22 MS. LI: Please stop your speaking
23 objections. Counsel --

24 MR. HEFAZI: It's not a speaking
25 objection.

1 MS. LI: Please refrain from your
2 speaking objections and please do not
3 interrupt me when I'm asking my questions.
4 You can object after my question is
5 finished. Okay?

6 MR. HEFAZI: Civility, Lily. Let's
7 not be rude to the witness.

8 MS. LI: Just for the record, I'm not
9 being rude to the witness. I'm -- you are
10 the ones who are interrupting me when I'm
11 asking a question.

12 So if we want to finish the deposition
13 efficiently, I suggest that you let me
14 finish my question, and you can object
15 after my question is done. Okay?

16 BY MS. LI:

17 Q. You're an expert in this IPR
18 proceeding, correct, for the '832 patent?

19 A. I'm hired as the expert on the '832
20 patent. Yes.

21 Q. So let me ask you this question again
22 and see whether you're able to answer it.

23 If the location of the viewing window
24 does not change over time, does it meet the Claim
25 10 limitation?

1 MR. HEFAZI: Objection. Form.

2 THE WITNESS: Again, you're asking a
3 hypothetical. You have to tell me where I
4 expressed an opinion and which exhibit,
5 which prior art.

6 So you're saying if a prior art does
7 not disclose it, then it doesn't satisfy
8 Claim 10. Which prior art are we talking
9 about? I mean, I have to refer to my
10 declaration to see. You have to put it
11 into context.

12 You know, you want me to answer a
13 general question. I think that -- I'm not
14 here to answer general questions. I'm here
15 to answer on the topics on which I have
16 formed an opinion and expressed an opinion
17 in my declaration.

18 BY MS. LI:

19 Q. So sitting here today, you're not able
20 to answer this question, correct?

21 A. That's incorrect. I answered the
22 question. I answered the question. I said that
23 you are asking me a general question. You want me
24 to express a general opinion. I think I'm --
25 you'll have to -- you know, I think general

1 questions is not -- I'm not here to answer general
2 questions.

3 I'm here to rebut Dr. Katsaggelos's
4 opinions and answer questions on the opinions I
5 have expressed in my declaration.

6 Q. So Dr. Katsaggelos's opinion is that
7 Claim 10 does not require that the viewing window
8 location changes over time.

9 Do you agree or disagree?

10 MR. HEFAZI: Objection. Form.

11 THE WITNESS: Can you show me where
12 Dr. Katsaggelos -- where it says that and
13 where in my declaration I refer to it?

14 BY MS. LI:

15 Q. Are you able to answer this? Do you
16 agree or disagree that Claim 10 does not require
17 the size of the -- sorry.

18 Do you agree or disagree that Claim 10
19 does not require the location of the viewing window
20 to be changed?

21 MR. HEFAZI: Objection. Form.

22 THE WITNESS: Claim 10 says what it
23 says. It says that the location and the
24 placement of viewing window is a function
25 of the progress through the progress length

1 because it's referring to Claim 1.

2 So I'm saying that that means that
3 it's changing over time.

4 BY MS. LI:

5 Q. Thank you.

6 In your opinion, for Claim 1, does it
7 also require that the rotation of the viewing
8 window change over time?

9 A. Well, again, we need to read through
10 Claim 1. Okay. Step two, it says: obtain
11 rotational position information for the video. The
12 rotational position information characterizing
13 rotational positions of the image capture device as
14 a function of progress through the progress
15 duration.

16 And then the next step says:
17 Determining a viewing window for the visual content
18 as a function of the progress through the progress
19 length based on the rotational positions of the
20 image capture -- I'm sorry -- image capture device
21 as the function of progress through the capture
22 duration. The viewing window defining extents of
23 the visual contents to be included within
24 horizon-leveled visual content as the function of
25 progress through the progress length, wherein the

Page 88

1 determination of the viewing window includes
2 determination of a placement of the viewing window
3 within the field of view of the visual content as a
4 function of progress through the progress length
5 based on the rotational positions of the image
6 capture device as a function of the progress
7 through the -- through the capture duration.

8 So it clearly says that, first, if the
9 rotational position information is obtained and
10 that rotational position information is used to
11 define viewing window as a function of progress
12 over progress length.

13 Q. Does it require the rotation of the
14 viewing window to change over time?

15 A. That's -- I think that's what a POSITA
16 would have understood. That is a function of
17 progress over progress length.

18 So if the rotation window is not -- if
19 the viewing window -- I'm sorry -- is not a
20 function of that, then it wouldn't change over
21 time. If it is a function of that, it -- it could
22 change over time.

23 Q. It could change over time?

24 A. Well, it depends on the motion. So if
25 the camera is -- for instance, for certain portion

1 of the time, that's what I meant that the claim
2 language does not disclude that, in the sense that
3 it doesn't stop the camera. It doesn't stop
4 working, saying that doing as a function of
5 progress but it would adjust. If the camera starts
6 rotating, then it would correct that. If the
7 camera is for some portion of the progress is
8 standing still, the functionality doesn't stop for
9 that claim. It's still doing it except that it's a
10 function -- it's not adjusting for rotation because
11 the camera isn't rotating. As soon as it starts
12 rotating, then it starts it. So it includes both.

13 I mean, I don't understand what you're
14 trying to say. If -- that's why I said that we are
15 speaking in -- in generality, you know,
16 hypothetical.

17 If -- you were saying a prior art. I
18 don't know what a prior art is disclosing. If a
19 prior art says that it is always at the center,
20 that's one thing. That's very different from this.

21 But this one says that is a function
22 of progress over progress length. So it could be
23 that camera is moving, and then at some point it is
24 stationary, or maybe just partially rotating and
25 then it's rotating -- it -- it encompasses all of

1 those situations.

2 Q. So is one of the situations that the
3 camera will keep its motion -- is that what you're
4 saying -- and not moving?

5 MR. HEFAZI: Objection to form.

6 THE WITNESS: That's not what I said.
7 I said that it encompasses all of that.

8 BY MS. LI:

9 Q. All of what?

10 A. All of that, you know, when rotation
11 is one angle, two angles, you know, we have 3
12 degrees of freedom in the 3D space. Or, you know,
13 if not rotating, just translating, panning. It
14 encompasses all possibilities. This patent --

15 Q. Does it encompass --

16 A. May I finish my sentence?

17 The plain claim language encompasses
18 all of that, all of those possibilities. So, yes,
19 it's a function of progress over progress length,
20 which means that it's changing.

21 But, you know, if a camera comes to a
22 full stop -- so if there's no rotational changes,
23 that's the signal it's receiving from the sensor.
24 It responds to that.

25 So, the way I read it is that the

1 plain claim language is more general. But function
2 of -- the fact that even, you know, it comes to
3 stand still, that's a change. You're saying that
4 it's not changing? But that is a change.

5 Q. What is changing?

6 A. Changing means that -- change happens
7 in time. If it previously was doing -- you know,
8 adjusting for, let's say, pan and now it's
9 adjusting for both pan and tilt or previously
10 adjusting for translation. So change means -- I
11 mean, you're using the word "change." The plain
12 claim language is not using it. Change happens
13 over time.

14 Q. Sorry. You just said --

15 MR. HEFAZI: Please wait. Wait.

16 Wait. Wait.

17 MS. LI: You said --

18 MR. HEFAZI: Please don't interrupt
19 the witness.

20 Dr. Foroosh, please finish your
21 answer.

22 THE WITNESS: Yeah. I'm saying that
23 change happens over time. And the progress
24 over the progress length, as the board
25 agreed also, is over time, at different

1 times. Change happens over time.

2 Now, that's what I mean that the plain
3 claim language is requiring change. I'm
4 not saying that change means that
5 necessarily one particular angle is always
6 changing or there's always translation.

7 But there's -- your plain claim
8 language says that it can encompass all
9 those possibilities. In other words,
10 change over time.

11 But it doesn't change over time. For
12 instance, as I said, if a camera is
13 rotating and stopped rotating, this is a
14 change. So from -- it appears to me,
15 unless I misunderstood, from your point of
16 view, that is not a change. So there's a
17 portion that no, I disagree with you.

18 There's a change. There's a
19 continuous change frame by frame. The fact
20 that no rotation at some portion of time
21 may happen, that's change from past or
22 future. So that's change also.

23 So, the plain claim language is
24 referring to that it responds to the
25 changes. It's as a function of progress

1 over progress length.

2 BY MS. LI:

3 Q. So does that mean the viewing window,
4 including its size, rotation, placement, will also
5 change over time?

6 MR. HEFAZI: Objection. Form.

7 THE WITNESS: Again, it's a function
8 of progress over the progress length. So
9 it's a function of time.

10 And as the board construed -- in other
11 words, that it's -- it's determined at
12 different times.

13 BY MS. LI:

14 Q. So, does the viewing window size
15 rotation and placement, location change over time?

16 MR. HEFAZI: Objection. This has been
17 asked and answered.

18 THE WITNESS: Again, I think I
19 answered that question. And I give many
20 examples. And you keep saying that.
21 You're saying -- I think you were --
22 correct me if I'm wrong.

23 It looks to me -- it appears to me
24 that you were implying that if the camera
25 is -- if the window stays, let's say, for a

1 portion of time, you know, it's at some
2 location or it doesn't change, that's not
3 change. I disagree with that.

4 As I said, over the progress -- it
5 says not only progress over time but
6 progress over the length of the video. So
7 that's a change too. I mean, it
8 accommodates all possible changes.

9 That's including, for instance, some
10 point or some period of time maybe there is
11 no rotation. The Claim 1 encompasses that.

12 BY MS. LI:

13 Q. So we're only talking about the
14 viewing window change, okay, here. Let's focus on
15 that. I'm not talking about some other changes.

16 So let's talk about the viewing window
17 change. I'm just trying to understand your
18 opinion. In your opinion, does the Claim 1 mean
19 the viewing window changes, right, including -- the
20 viewing window includes placement, size, location,
21 rotation?

22 A. Yes. As a function of the progress
23 over the progress length. So as I said, that it
24 doesn't mean that every -- you see, you're trying
25 to transform the function of the -- to my opinion,

1 you're changing the -- you're -- you're imposing
2 the word "change." You're trying to change the
3 claim language. That's not what the claim language
4 is.

5 Claim language is, to my opinion,
6 broader than that. It includes the -- you know, it
7 include -- it's as a function of progress over
8 progress length, which means that within the
9 progress length, anything that's sensed by the
10 sensors on the image capturing device would affect
11 the viewing window. You said change the viewing
12 window. Affect the viewing window, yes. It means
13 changing the viewing window.

14 But if in one frame to the next frame,
15 some aspects are not changed, it doesn't mean that
16 it's not changing. It's just --

17 Q. But does the viewing window change?

18 MR. HEFAZI: Objection. Form. It's
19 very vague.

20 THE WITNESS: I think the word
21 "change" does not appear here in the claim
22 language. I don't know what you mean by
23 that.

24 And as I expressed, if you mean that
25 there could be portions that, you know,

1 some rotation angle is not changing. You
2 know, but that's a change. You know, it
3 depends how you take it. It's a change.
4 Change is over time. So if something is
5 changing and stops changing for a while and
6 then it starts changing again, then it's
7 change even when it stops in the rotation.
8 It's a change with respect to past and
9 future. Those are changes.

10 So it depends. You know, that's why I
11 said as a function of progress over length.
12 So you cannot take a snippet of the video
13 and say, no, it didn't change here. That's
14 what I'm trying to say.

15 So I disagree with that. That's a
16 change too because we have to get it as a
17 function of the progress length.

18 Again, also, we have to put it in the
19 context of where I have expressed my
20 opinion. You know, you're asking a very
21 general question.

22 Can you tell me which particular
23 exhibit or prior art in which I have
24 expressed opinion where I'm talking about
25 that?

1 BY MS. LI:

2 Q. So what does the function of progress
3 mean to a skill in the art?

4 A. It means that it depends on the
5 progress of the video and the progress length.

6 Q. So, if some things depend on the video
7 progress, does that mean that something has to
8 change during the video progress?

9 A. Well, if one variable depends on
10 another variable, it's dependent on that. It's a
11 function of that. So if that independent variable
12 changes, then it changes your dependent variable.

13 In this case, viewing window, the
14 placement, size, shape and -- and -- and the
15 rotation is a function of progress over progress
16 time. So it implies that it's changing with that.

17 Q. Okay. Okay. Now let's look at Claim
18 8 for a second. Claim 8 says, "The system of Claim
19 7, wherein the size of the viewing window changes
20 as the function of progress through the progress
21 length."

22 Do you see that?

23 A. Yes.

24 Q. So it actually uses the word
25 "changes," correct?

1 A. Changes. Yes.

2 Q. Now let's look at Claim 10.

3 A. Yes.

4 Q. Do you see the word "change" in Claim
5 10?

6 A. I do not see the word "change," no.

7 Q. Okay. Now, let's look at Claim 1
8 again.

9 A. Yes.

10 Q. Line 34 of column 28. Claim 1 recites
11 "the video content, including visual content,
12 captured at different moments within the capture
13 duration."

14 Do you see that?

15 A. Which line was that again? I'm sorry.

16 Q. Line 34 to 36 of column 28.

17 A. Yes. It says, "The video content,
18 including visual content, captured at different
19 moments within the capture duration."

20 Is that the part you're referring to?

21 Q. Yeah.

22 A. Yes.

23 Q. So what is your understanding of
24 visual content?

25 MR. HEFAZI: Objection to form.

1 THE WITNESS: I don't believe in my
2 declaration I expressed any opinion on the
3 term -- terms "visual content."

4 BY MS. LI:

5 Q. Do you have an opinion now?

6 MR. HEFAZI: Objection. Form.

7 THE WITNESS: I'm here to answer to
8 the opinions I have expressed. And you're
9 asking me to -- on the fly to give you an
10 opinion on what visual content means.

11 BY MS. LI:

12 Q. Would a skill in the art understand
13 what visual content means in the context of this
14 claim language?

15 A. Where you're dealing with a camera, a
16 camera takes pictures. A visual means being
17 viewable aspects that you see in these images. And
18 content, whatever is the content. I mean, the
19 plain and ordinary and customary meaning of those
20 words. It means that what is imaged.

21 MR. HEFAZI: And just before you go on
22 to another line of questioning, if you can
23 just factor in lunch too.

24 MS. LI: Yeah. Yeah.

25 BY MS. LI:

1 Q. So is visual content image
2 information?

3 A. I think you broadened probably that.
4 Image information? What do you mean by
5 "information," the "image information"?

6 Q. Is visual content a file or is visual
7 content like pixel information?

8 What is it?

9 MR. HEFAZI: Objection. Form.

10 THE WITNESS: Again, I haven't
11 expressed any opinion on what visual
12 content means in my declarations.

13 And you asked me what would -- a
14 POSITA would understand. I expressed, you
15 know, we're dealing with cameras. Images
16 are taken. What is viewable within the
17 images, that a POSITA would understand
18 that's the visual content.

19 BY MS. LI:

20 Q. So what is it? What is the visual --
21 you said the POSITA will understand visual content
22 to be visual content.

23 What is it?

24 A. I didn't say that. I said that what
25 POSITA can view, what is viewable -- what a POSITA

1 can see in the image. It could be objects. It
2 could be whatever is imaged.

3 Q. Does it have to be a file?

4 A. Can I finish my sentence, please?

5 Q. Yeah. Sorry. Go ahead.

6 A. Yeah.

7 I said that a POSITA would understand
8 what's in the image and he -- what he or she sees.
9 The content of the image is the -- which is visual,
10 viewable. That's the visual content.

11 Q. Does it have to be a file?

12 MR. HEFAZI: Objection. Form.

13 THE WITNESS: I did not express any
14 opinion on that.

15 BY MS. LI:

16 Q. Do you have an opinion now?

17 MR. HEFAZI: Objection. Asked and
18 answered.

19 THE WITNESS: Again, you're asking me
20 a hypothetical question and on the fly to
21 answer -- give an opinion now.

22 I mean, I'm not going to express an
23 opinion on the fly like this.

24 If you ask me where in my declarations
25 I have expressed any opinion on that, I

1 would be more than glad to discuss it.

2 BY MS. LI:

3 Q. Okay. So it's not your opinion that
4 visual content has to be a file?

5 MR. HEFAZI: Objection. Form.

6 THE WITNESS: That's not what I said.
7 I didn't say it's a file or it's not a
8 file. I said -- I said I have not
9 expressed any opinion on that.

10 BY MS. LI:

11 Q. Are you a skill in the art?

12 A. Do you mean am I a POSITA?

13 Q. Yeah.

14 A. Yes.

15 Q. Would a POSITA understand whether
16 visual content is a file or not a file?

17 MR. HEFAZI: Objection. Form.

18 THE WITNESS: Again, the word "visual
19 content" doesn't indicate either way. So,
20 whether it's a file or not a file or is
21 some signal inside -- I mean, there is
22 no -- it depends on the context.

23 You know, you're talking about visual
24 content. And I gave you a POSITA's
25 understanding what visual content would be.

1 Now you're going beyond that and making a
2 hypothetical.

3 Would it be a file? Maybe. Maybe
4 not. It depends on the context.

5 BY MS. LI:

6 Q. So, a POSITA would understand visual
7 content does not have to be a file?

8 MR. HEFAZI: Objection. Form.

9 THE WITNESS: I think I answered that
10 question. I said that it may be. It may
11 not. I have not expressed any opinion on
12 that, whether it's a file or not a file.

13 BY MS. LI:

14 Q. Can visual content be part of the
15 horizon level of the visual content?

16 A. Well, we can read through the --
17 through the claim, Claim 1.

18 MR. HEFAZI: And I'll just, again,
19 object to form.

20 THE WITNESS: So that's -- I'm
21 assuming that basically relates to the last
22 step in Claim 1.

23 It says: Generate the horizon-leveled
24 visual content based on the viewing window.
25 The horizon-leveled visual content,

1 including a punchout of the extents of the
2 visual content defined by the viewing
3 window, wherein inclusion of the extents of
4 the visual content defined by the viewing
5 window within the horizon-leveled visual
6 content effectuates horizon leveling of the
7 visual content.

8 BY MS. LI:

9 Q. Uh-huh.

10 A. So my -- the way I read it, it says
11 what it says. Basically the viewing window has
12 visual content, which is defined by the extents --
13 I'm sorry -- that defines the extents of the visual
14 content and viewing window. And that's punched out
15 for displaying.

16 Q. For displaying for the horizon-leveled
17 visual content?

18 A. For displaying the horizon-leveled
19 visual content.

20 Q. Okay. So, the horizon-leveled visual
21 content includes some portion of the visual content
22 defined by the viewing window?

23 A. Yeah. It uses the word "extents."
24 The viewing window defines -- one of the features
25 of viewing window is that it defines the extents of

1 the horizon-leveled visual content, which it
2 depends -- which itself depends on, you know,
3 progress length over progress -- on the progress
4 over progress length because it's following the
5 previous steps. And that is the portion that is
6 punched out.

7 Q. Uh-huh. Uh-huh.

8 So the horizon-leveled visual content
9 also includes the visual content, correct?

10 MR. HEFAZI: Objection. Form.

11 Incomplete hypothetical.

12 MS. LI: Counsel, please refrain to
13 form only objection and stop doing the
14 speaking objections.

15 THE WITNESS: I -- I'm not clear on
16 your question. I'm sorry. So, what was
17 your question?

18 So, I think -- I went through the -- I
19 went through the last step of Claim 1,
20 which connects the visual content to -- to
21 both viewing window and horizon-leveled
22 visual content.

23 I'm not sure if I understand your
24 question. What was your question? Can you
25 rephrase that?

1 BY MS. LI:

2 Q. Okay. You just said the last step of
3 Claim 1 which connects visual content to both the
4 viewing window and the horizon level visual
5 content, correct?

6 A. So, I mean, the best way of doing it
7 is just read through it. I can do that.

8 It says, "Generate the horizon-leveled
9 visual content based on the viewing window. The
10 horizon-leveled visual content, including a
11 punchout of the extents of the visual content
12 defined by the viewing window."

13 So the viewing window defines the
14 extent of the visual content that is punched out.

15 "Wherein inclusion of the extents of
16 the visual content defined by the viewing window
17 within the horizon-leveled visual content
18 effectuates horizon leveling of the visual
19 content."

20 Q. Uh-huh.

21 A. So, the viewing window, one of its
22 features, among others, is that it defines the
23 extents of the visual content that will be punched
24 out to generate horizon-leveled video.

25 Q. Okay. So the horizon-leveled visual

1 content includes some portion of the visual content
2 that is defined by the viewing window, right?

3 A. Yeah. The portion defines -- so the
4 viewing window defines the extents -- I mean, I'm
5 using the same words as -- defines the extents of
6 the visual content that is punched out.

7 Q. Okay. For the horizon-leveled visual
8 content?

9 A. Yes.

10 Q. Okay.

11 MS. LI: All right. I think maybe
12 it's time for a short break for lunch.

13 (A brief recess was taken from
14 12:24 p.m. to 1:09 p.m.)

15 BY MS. LI:

16 Q. Welcome back, Dr. Foroosh.

17 A. Thank you.

18 Q. Did you discuss any substantive
19 testimony with counsel during the break?

20 A. No.

21 Q. Let's go to Claim 3 of the '832
22 patent, Exhibit 1001.

23 A. Yes.

24 Q. You see column 3 that recites --

25 A. Yes. I can read.

1 The system of Claim 1, wherein the
2 visual content includes a distortion such that a
3 straight line within a scene depicted within the
4 visual content appears as a curved line. The
5 distortion of the visual content reducing impact of
6 an off-axis horizon depicted within the
7 horizon-leveled visual content.

8 Q. Okay. What is the POSITA's
9 understanding of off-axis horizon?

10 A. That means that the horizon is not
11 perfectly aligned.

12 Q. Uh-huh. Okay.

13 Let's go to column 22.

14 A. Of the same exhibit?

15 Q. Yes.

16 A. Yes.

17 Q. Line 15.

18 A. Yes.

19 Q. Do you see that it reads: Existence
20 of such distortions within an image may create
21 curves within the image which may take -- which may
22 make an off-axis horizon less noticeable than in an
23 image without distortion.

24 Do you see that?

25 A. I see that.

1 Q. Do you agree with this statement?

2 MR. HEFAZI: Objection to form.

3 THE WITNESS: It doesn't matter
4 whether I agree or not. That's what it
5 discloses.

6 BY MS. LI:

7 Q. You don't disagree with this
8 statement, do you?

9 A. I neither agree or disagree. I mean,
10 it just says what it says.

11 Q. Do you understand the statement?

12 A. I understand it. And in fact, to be
13 read -- claim I read, rather. Claim 3, which
14 basically -- I think it's Claim 3 within the specs
15 is basically described, in part at least, in that
16 sentence.

17 Q. What do you mean by "in part"?

18 A. I mean that it might have been
19 described also in different parts.

20 Q. Okay.

21 A. That sentence is probably not the only
22 sentence --

23 Q. Okay.

24 A. -- referring to that concept.

25 Q. Okay. So let's look at the sentence.

1 Does this sentence refer to anything other than the
2 existence of distortion that makes an off-axis
3 horizon less noticeable?

4 MR. HEFAZI: Objection. Form.

5 THE WITNESS: So that was -- which
6 line was it again? Can you remind me again
7 what line?

8 BY MS. LI:

9 Q. Column 22, line 15.

10 A. 15.

11 Q. Through 18.

12 A. Yeah. So again, reading this,
13 "Existence of such distortions within an image may
14 create curves within the image which may make an
15 off-axis horizon less noticeable than in an image
16 without distortion."

17 So it says that if an image has a
18 distortion off-axis horizon -- the impact of
19 off-axis horizon is less noticeable.

20 Q. So does this sentence refer to
21 anything other than the existence of distortion
22 that would make an off-axis horizon less
23 noticeable?

24 A. That sentence states what it says. It
25 just refers to, yes, the existence of distortion

1 makes an off-axis horizon less noticeable.

2 Q. Okay. You didn't cite or mention this
3 passage in your declaration, did you?

4 A. I do not remember that. I certainly
5 addressed Claim 3. But I might not have cited to
6 that particular sentence.

7 Q. Now, let's look at the same column,
8 22nd, and just starting from line 63.

9 A. Yes.

10 Q. So, it reads: The distortion within
11 an image may be changed to include a desired
12 distortion that reduces the impact of an off-axis
13 horizon depicted within the visual content (e.g.,
14 via a direct transformation that changes the
15 existing distortion to the desired distortion; via
16 an indirect transformation that removes an existing
17 distortion and then applies the desired
18 distortion).

19 Do you see that?

20 A. I see that. Yes. Excuse me.

21 Q. So, if you look at the last sentence,
22 which is in column 23rd, line 1, 2, 3, the '832
23 patent describes the removing of the existence of
24 distortion and then applies a desired distortion,
25 correct?

1 A. I'm sorry. Did you say '832 patent is
2 disclosing removing distortion and applying a
3 distortion? Is that what your question was?

4 I'm confused about your question.
5 What was your question again?

6 Q. My question is if you look at the last
7 sentence of this paragraph. So the patent
8 describes basically removing the existing
9 distortion and then applies a desired distortion,
10 correct?

11 A. The last sentence, it says that. By
12 an indirect transformation that removes the
13 existing distortion and then applies the desired
14 distortion.

15 Q. You didn't cite or mention this part
16 in your declaration, did you?

17 A. I do not recall citing those lines.

18 Q. Okay. Let's go to the patent column
19 9.

20 A. Column 9? Yes.

21 Q. Line 15 to 19.

22 A. Yes.

23 Q. So, it reads, "Horizon leveling of
24 visual content may be performed based on placement
25 of the viewing window within the field of view of

1 the visual content."

2 Do you follow me?

3 A. Yes.

4 Q. "The placement of the viewing window
5 may compensate for the rotation, parenthetical
6 tilt, of the image capture device during the
7 capture duration."

8 A. Yes.

9 Q. You follow me?

10 A. Yes.

11 Q. So this passage talks about the '832
12 patent doing horizon leveling to compensate for the
13 rotation and tilt of the image capture device,
14 right?

15 A. Yes.

16 Q. Okay.

17 A. It says that.

18 Q. All right.

19 A. But I would like to add that tilt
20 would be a special case of rotation. I don't
21 believe the actual plain language of the claims is
22 limited to tilt. It says "rotation." Rotation or
23 position or rotation.

24 Q. So tilt is a special case of rotation?

25 A. It's just given it as an example.

1 Q. Okay. Now let's -- why don't we
2 introduce a new exhibit.

3 (Petitioner's Exhibit 1004 was
4 marked for identification.)

5 BY MS. LI:

6 Q. Dr. Foroosh, this is a copy of the
7 Thomason prior art I'm sure you are familiar with.

8 A. Yes.

9 Q. All right. So let's look at the title
10 of Thomason.

11 A. Yes.

12 Q. It's "Image Rotation Correction For
13 Video Or Photographic Equipment"; is that right?

14 A. Yes.

15 Q. And if you go to paragraph 1.

16 A. Yes.

17 Q. And Thomason discloses that the
18 invention relates to the processing of image
19 information, particularly in video or photographic
20 equipment and to apparatus for recording images
21 such as video or photographic images, correct?

22 A. That's what it states.

23 Q. So Thomason discloses processing
24 videos, right?

25 A. Yes. In that paragraph, he's

1 disclosing videos.

2 Q. And let's look at Thomason, paragraph
3 15.

4 A. Yes.

5 Q. It states "A plurality of sensors may
6 be provided to allow for image correction in a
7 number of planes; for example, corrections for
8 rotation and tilt."

9 Do you see that?

10 A. Yes, I see that.

11 Q. That paragraph is not mentioned in
12 your declaration, correct?

13 A. I don't -- I do not recall.

14 Q. And let's go to Thomason, paragraph
15 41.

16 A. Yeah. Yeah, but can I continue
17 reading that paragraph because you cherry-picked, I
18 think, just one sentence out of there.

19 Q. Okay.

20 A. Paragraph 15 continues saying that the
21 camera may be able to use the information from the
22 sensors to record the panoramic image -- to record
23 the panoramic image by stitching together a
24 plurality of individual images.

25 (Reporter clarification.)

1 THE WITNESS: So I'm sorry. So just
2 to put it into context, it's -- paragraph
3 15 is talking about that particular
4 processing applied to generating a
5 panoramic image.

6 BY MS. LI:

7 Q. But it also discloses a plurality of
8 sensors may be provided to allow for image
9 correction in a number of planes, correct?

10 A. In the context of generating a
11 panoramic image.

12 MR. HEFAZI: I'm just also going to
13 object to form and scope to the extent that
14 this is outside the scope of what was cited
15 by petitioner.

16 MS. LI: Okay. Noted.

17 BY MS. LI:

18 Q. Let's move on to paragraph 41.

19 MR. HEFAZI: Same objection for 41.

20 BY MS. LI:

21 Q. Okay. This paragraph reads, "The
22 rotation sensor 14 may be a multiple angle rotation
23 sensor capable of measuring orientation about more
24 than 1 axis and storing the results in memory 12.
25 The sensor may include a plurality of

1 accelerometers."

2 Did I read it correctly?

3 A. You read that correctly.

4 Q. So Thomason discloses a plurality of
5 accelerometers, correct?

6 A. Yes. But Dr. Katsaggelos is not
7 relying on that. Dr. Katsaggelos is relying on
8 specific disclosures that are related to Figure 3
9 and Figure 4 through 6. Those passages that you're
10 mentioning is not in the combination offered by
11 Dr. Katsaggelos.

12 So I have not referred to them in
13 rebutting Dr. Katsaggelos's opinions. Therefore, I
14 have only focused on Figure 3, 4 through 6 that he
15 has used in his combinations. And those ones are
16 not referring to multiple sensors or multiple
17 angles. It's a single angle. It's a single
18 accelerometer.

19 Q. So you do not consider paragraph 41 in
20 forming your opinions, correct?

21 MR. HEFAZI: Objection to form.

22 THE WITNESS: Well, as I said, I'm
23 rebutting Dr. Katsaggelos's opinion in the
24 combinations he offered. Those paragraphs,
25 I didn't see them in Dr. Katsaggelos's

1 opinion.

2 BY MS. LI:

3 Q. I'm not asking you whether these are
4 in Dr. Katsaggelos's declarations. I'm asking you,
5 did you consider paragraph 41 in forming your
6 opinions in your declarations?

7 A. Well, again, I'm not citing to them
8 for the same reason that I just mentioned, is that
9 those are not the combinations that the petitioner
10 or Dr. Katsaggelos are offering.

11 The combination -- the portion of
12 Thomason that had been used in that combination is
13 passages related to Figure 3 and 4 through 6. So
14 in my declaration -- in forming, rather, my
15 opinion, I'm -- I'm addressing those -- I mean
16 within the combinations offered, I'm addressing
17 passages that are related to those embodiments.

18 Q. So you considered Figure 3 and 4
19 through 6 in Thomason, but you did not consider the
20 disclosure in paragraph 41, correct?

21 MR. HEFAZI: Objection. Form.

22 THE WITNESS: What I said was that
23 those passages that you read or you asked
24 me to read are not part of the combination
25 that petitioner and Dr. Katsaggelos

1 offered.

2 And therefore, my opinion was about
3 portions that are in the combination. And
4 I think the combinations that were offered
5 did not make the patent claims obvious. So
6 I addressed those ones, passages related to
7 Figure 3 and 4 through 6.

8 BY MS. LI:

9 Q. Okay. So you did not address
10 paragraph 41 in your declarations, correct?

11 MR. HEFAZI: Objection. Form.

12 THE WITNESS: Again, you know, if I'm
13 not -- if I'm not citing to that, it's
14 because Dr. Katsaggelos is not using those
15 for forming his opinion because in the
16 combination he offered -- or in the
17 combination he -- combinations he offered,
18 he's using Figure 3 and Figure 4 through 6
19 and the passages that are described in
20 those figures.

21 So I didn't see any reason why -- and
22 I do not see still any reason why I should
23 go outside the combination that is claimed
24 to make the claims of the patent obvious.
25 I don't know why should I address some --

Page 120

1 you know, an opinion outside what
2 petitioner is -- is --

3 BY MS. LI:

4 Q. Okay. So you do not believe you need
5 to address paragraph 41 in your declarations,
6 correct?

7 A. It's not that I believe that I
8 should -- I have not addressed in the sense that --
9 as I said, it's not part of the combination that
10 petitioner or Dr. Katsaggelos offered.

11 So I'm addressing that if it's not
12 part of the combination, then -- I mean, the
13 combination isn't used to state that -- I mean
14 prove the obviousness. And I'm saying that those
15 combinations are not proving the obviousness.

16 Q. So do you think Thomason discloses the
17 plurality of accelerometers?

18 A. Based on the passage that you read,
19 yes. But you need to put it in the context. As I
20 said, for instance, you read one sentence of one of
21 the paragraphs. And if you continue reading the
22 remaining part of that sentence, it says that in
23 the context of generating panoramic image. That's
24 not --

25 Q. Where does -- go ahead.

1 A. That's not part of the combination --
2 or even generating panoramic image, I don't think
3 is part of the claim language of the '413 patent.
4 But it's definitely not also part of the
5 combination that Dr. Katsaggelos offered or the
6 petitioner offered in their petition.

7 Q. But you agree that Thomason discloses
8 a plurality of accelerometers, correct?

9 A. In the context that you asked me to
10 read, yes. But in the context of the combinations,
11 it doesn't. In the context of the combinations
12 that the petitioner or Dr. Katsaggelos are offering
13 are related to Figure 3 and Figure 4 through 6, no.
14 It says that -- it actually says -- let's have a
15 look, for instance.

16 You know, if you look at paragraph 29,
17 it says: A rotation sensor 14 is provided that
18 measures the angle -- singular -- of the camera to
19 the vertical -- you know, just one direction, one
20 axis -- and outputs a corresponding measurement
21 signal. This -- this angle -- again singular -- is
22 recorded in the memory 12. The rotation sensor --
23 not sensors -- the rotation sensor is an accurate
24 accelerometer.

25 That's the paragraph he's referring to

1 in those figures. I mean, we can continue and look
2 at the actual, other paragraphs, like 36 and
3 others. You see that it's always talking about one
4 angle, one sensor. So those are the paragraphs
5 describing the combinations that the petitioner is
6 suggesting or stating that make the patent claims
7 obvious. And I'm saying that that's not true.

8 Q. So Figure 1 of Thomason shows a
9 rotation sensor 14 that's labeled as 14, right?

10 A. Figure 1 on which page, you said? I'm
11 sorry.

12 Q. Page 2 of Exhibit 1004.

13 A. It's not annotated, but -- did you say
14 12? I mean, it's not annotated, this figure.

15 Q. But Figure 1 shows 14, which is the
16 rotation sensor, correct?

17 A. Off the top of my head, if 14 is the
18 rotation sensor, then that's correct.

19 Q. And, paragraph 41, reads, "The
20 rotation sensor 14 may be a multiple angle rotation
21 sensor capable of measuring orientation about more
22 than 1 axis," correct?

23 MR. HEFAZI: Objection. Form.

24 THE WITNESS: Paragraph 41, you said?

25 BY MS. LI:

1 Q. Yes.

2 A. Okay. So let me read that. It says
3 that -- it says that the rotation sensor 14 --
4 rotation sensor 14 may be a multiple angle rotation
5 sensor capable of measuring orientation about more
6 than one axis and storing the results in memory 12.
7 The sensor may include a plurality of
8 accelerometers. The stored information may then be
9 used, for example, to stitch together the high
10 quality image from several successive image to make
11 up a panoramic images -- I guess image -- a
12 panoramic image using the orientation information
13 to accurately align and stitch together the
14 different still images.

15 It just confirms -- you just confirmed
16 what I said, is that you have to put it in the
17 context. You cannot just read the first sentence.

18 This is not in the combination offered
19 by -- first of all, by the petitioner. Secondly,
20 it says that in the context, it's for stitching
21 together, you know, multiple images to make a
22 panoramic image.

23 I mean, this has nothing to do with
24 claim -- plain claim language. And it's definitely
25 not part of the combination that the petitioner and

1 Dr. Katsaggelos is using.

2 Q. Are you saying that paragraph 41 has
3 nothing to do with Figure 2 through Figure 7?

4 Is that your testimony?

5 A. Figure 2 through Figure 7. I never
6 said it has nothing to do with it. It's referring
7 to 14. It says that 14 may be a multiple angles
8 sensor and then in which it can be used for
9 generating panoramic images.

10 So, I mean, it says what it says. You
11 cannot just read one sentence in that paragraph and
12 say that, okay, it's disclosing something. The
13 truth is that if you look at Figure 3, it says that
14 it's only one angle, single sensor. It's --
15 singular. The terms are singular. You know,
16 single angle. One is a rotation sensor, and one
17 angle is measured --

18 Q. Can you point me to where does the
19 Thomason description mentions the word "singular"
20 or "single"?

21 A. Well, I'm saying that it's not in
22 plural. I'm not saying Thomason is saying
23 singular.

24 As I told you, when I read paragraph
25 29, it makes it clear that -- you know, it says the

1 words like -- it just defines one direction, which
2 is the vertical. And it says measures the angle of
3 the camera. So otherwise, it would have said the
4 angles of the camera.

5 Q. What does the term "a" mean to a skill
6 in the art?

7 A. Which sentence?

8 Q. It says -- in paragraph 29, you were
9 just reading, it says "a rotation sensor."

10 A. Yes.

11 Q. So, what does the term "a" mean to a
12 skill in the art?

13 A. One rotation sensor.

14 Q. So "a" means one?

15 A. In this context, it means that --
16 because if you have a look at it -- that's the
17 sensor. I'm not even relying on that.

18 I'm saying that it says "angle." It
19 doesn't say "angles." The sensor could be one
20 sensor but measure in multiple angles. But it says
21 "angle." It doesn't say "angles." I don't see it
22 anywhere. That's what I meant it's singular. It's
23 not plural. That's what I'm trying to say, is that
24 it's measuring one angle. And the angle is -- so
25 the angle. So, or this angle is recorded in the

1 memory 12. The rotation sensor is an accurate
2 accelerometer.

3 Well, if it says -- it actually says
4 it's an accurate accelerometer. I think -- not I
5 think. A POSITA, as of the priority date, would
6 have known that one accelerometer can measure only
7 what we refer to as the DC angle, which is the
8 direction of vertical, as it says. It actually
9 confirms what I'm saying. It measures the angle
10 with respect to the gravitational acceleration.

11 Q. So paragraph 29 says, "The rotation
12 sensor is an accurate accelerometer."

13 What does a skill in the art
14 understand "an" in the sentence to be?

15 A. For me, it means that it's one
16 accelerometer. Because in the context earlier, it
17 said the angle of the camera to the vertical. A
18 person skilled in the art would know that with one
19 accelerometer, you can measure only angle with
20 respect to vertical. And the vertical here refers
21 to the gravitational acceleration. This is a
22 technical knowledge of -- that the POSITA would
23 have as of the priority date.

24 If you have one accelerometer, you
25 measure the so-called DC acceleration, which is the

1 acceleration that is always there. It was just the
2 gravitational. I'm sorry.

3 Q. So, when a skill in the art reads, you
4 know, a reference like Thomason, does it -- does
5 the skill in the art should also consider the
6 context of Thomason, including other passages in
7 Thomason in addition to paragraph 29 you're
8 focusing on here?

9 A. Well, I'm focusing on portions that we
10 are in the combination that is provided and stating
11 that those combinations make the claims obvious.
12 I'm saying that those combinations are referring to
13 a single sensor measuring a single angle. And
14 that's the vertical direction tilt.

15 Q. But you don't dispute that paragraph
16 41 discloses rotation sensor that may be a multiple
17 angle rotation sensor capable of measuring
18 orientation about more than one axis, correct?

19 A. It reads what it reads. But you're
20 taking it -- again, you're taking it out of context
21 because the paragraph continues.

22 It says: The stored information may
23 include the plurality of accelerometers -- yes --
24 the stored information may then be used, for
25 example, to stitch together a high quality image

1 from several successive image -- I think images
2 should be -- to make up the panoramic images using
3 the orientation information to accurately align the
4 stitch -- to accurately align and stitch together
5 the different still images.

6 So the context of this is that you
7 take multiple images. You have all these accurate
8 orientations, you know, multiple axes. And then
9 you stitch them together to generate a panoramic
10 view. That's the context of having multiple angle
11 measurements.

12 Q. So the sentence in paragraph 41 reads:
13 The stored information may then be used, for
14 example, to stitch together a high quality image
15 from several successive images to make up -- make
16 up panoramic images. Right?

17 Do you see the word "may" and do you
18 see the word "for example"?

19 A. Sure.

20 But, show me anywhere else that shows
21 other examples or using multiple -- I mean, first
22 of all, going back, the combination that you are
23 using -- by you, I mean the petitioner and
24 Katsaggelos is using -- is not referring to that.
25 The combination is a single sensor -- single angle

1 measurements, you know, with respect to the
2 vertical. So that's one thing.

3 Second thing, show me where else --
4 it's not because it says "may." It means that I
5 have to go out of my way and imagine a lot of other
6 things. That's -- I don't think that a POSITA
7 would read that and would say, Okay, what other
8 options is there, are there anything included?

9 But from there, putting in the
10 context, that's -- that's the example that they
11 give. Whether Thomason had other ideas of using
12 it, I don't know. Show me where. But I think at
13 the end of the day, it really doesn't matter.

14 What matters from my point of view is
15 the combination that -- that Dr. Katsaggelos is
16 advocating. That combination is a single sensor,
17 single axis.

18 Q. What combination do you believe
19 Dr. Katsaggelos is advocating?

20 A. Well, I'm referring to combinations
21 used in -- with -- I mean -- I forgot my word. In
22 1 and 2, the combinations in the --

23 MR. HEFAZI: Grounds?

24 THE WITNESS: Grounds. Thank you.

25 -- in Grounds 1 and 2.

1 BY MS. LI:

2 Q. What made you believe that
3 Dr. Katsaggelos' Grounds 1 and 2 excludes the
4 disclosure of paragraph 41?

5 A. Because Dr. Katsaggelos is referring
6 to Figure 3 and Figures 4 through 6.

7 Q. You don't believe that
8 Dr. Katsaggelos' declarations cite to Figure 1?

9 A. Yeah. But Figure 1 is not talking
10 about -- Figure 1 is just saying what is
11 incorporated in the apparatus.

12 Q. Figure 1 shows the rotation sensor 14,
13 correct?

14 A. Yes.

15 Q. And paragraph 14 gives some
16 description about the rotation sensor 14, correct?

17 A. Paragraph 14?

18 Q. 41.

19 A. 41. Yeah. But so does paragraph 29.
20 So these are various different disclosures made by
21 Thomason.

22 Okay. So, then, in that case, I can
23 argue then, hey, paragraph 29 is also referring to
24 14, sensor 14. So it's just saying that these are
25 various possibilities, paragraph 29 and paragraph

1 41.

2 But in paragraph 41, as I said, you
3 need to put them into context. In the context, it
4 says that it's used for stitching multiple images.

5 Q. But you don't dispute that paragraph
6 41 describes rotation sensor 14 as shown in Figure
7 1, correct?

8 A. Yeah. So the word "sensor" is a
9 little bit more general. The sensor could include
10 one accelerometer, two or more, three
11 accelerometers, maybe more. Sensor could mean a
12 lot of things.

13 But yes. It's a single sensor 14.
14 But in paragraph -- again, as I said, 29, it's one
15 accelerometer measuring along the vertical.

16 Q. Okay. And then you were speaking as a
17 person of ordinary skill in the art, correct?

18 A. That is correct. Yes.

19 Q. Let's take a look at paragraph 16 of
20 Thomason.

21 A. Yes.

22 Q. It reads, "The invention also relates
23 to a camera as set out above incorporated into a
24 further device, including, for example, a mobile
25 telephone or a computer."

1 Do you see that?

2 A. Yes.

3 Q. So Thomason discloses a camera using a
4 mobile telephone, correct?

5 A. It does. Yes. In paragraph 16.

6 Q. And a mobile telephone is a handheld
7 device, correct?

8 A. Yes.

9 Q. And a mobile phone. That is a
10 handheld device that can move around based on how
11 the user moves, correct?

12 A. That's a hypothetical question because
13 yes, a mobile device can move as the user moves.
14 But that doesn't mean that this disclosure is
15 talking about that.

16 Q. Let's look at Thomason, paragraph 7.

17 A. Yes.

18 Q. It reads, "Preferably, the accuracy of
19 the rotation sensor is much better than 5 degree,
20 i.e., 2 degree or better, or further preferably 1
21 degree or better or even .5 degree or better."

22 Do you see that?

23 A. Yes.

24 Q. So Thomason discloses a rotation
25 sensor with an accuracy of .5 degree or better,

1 correct?

2 A. Yeah. It says "preferably," you know,
3 better than 5 degrees. It says what it says.

4 Q. Uh-huh.

5 And that's not mentioned or cited in
6 your declarations, correct?

7 A. I do not recall if I referred to
8 accuracy. Again, I only addressed the combinations
9 that Dr. Katsaggelos offered. So, I'm -- I'm a
10 rebut expert. So I was rebutting the combinations
11 that he's offering that I was rebutting.

12 Q. Okay. So that's not mentioned in your
13 declaration. I don't think you're disputing that,
14 right?

15 A. I don't recall mentioning that, no.

16 Q. And so Thomason discloses that the
17 horizon leveling may not be perfect every time,
18 right? Because, you know, there's a .5 degree
19 potential, you know, deviation?

20 A. It doesn't talk about perfection. You
21 said it's not perfect. I don't know what that
22 means exactly.

23 But it says that there is a -- you
24 know, preferably, it has an accuracy all the way
25 down to 0.5 degrees.

1 Q. It doesn't say it has an accuracy of
2 .0 degree, correct?

3 A. No. It doesn't say accuracy of .0
4 degree.

5 Q. Let's look at Thomason paragraph 27.

6 A. Yes.

7 Q. So it reads: The camera may record
8 either still images or moving images, in the latter
9 case, by capturing a sequence of items of image
10 data 8 representing sequential frames of the moving
11 image.

12 A. I'm sorry. I'm lost here. Are we in
13 paragraph 27, you said? Which paragraph are you
14 reading?

15 Q. Yes.

16 MR. HEFAZI: Sorry. I'm --

17 BY MS. LI:

18 Q. Paragraph 27, the last sentence.

19 A. Oh, the last sentence. I was trying
20 to -- okay.

21 Yes. It says that the camera may
22 record either still images or moving images, in the
23 latter case, by capturing a sequence of items of
24 image data 8 representing sequential frames of the
25 moving image.

1 Q. What --

2 A. I see that.

3 Q. Okay. What is the skill in the art's
4 understanding of image data?

5 A. Which -- the plain and customary
6 meaning. An image is a pictorial data and data of
7 data. Datum, plural. Image data. I mean, I'm not
8 sure what you mean by what is the POSITA's
9 understanding of image data.

10 That being said, I mean, reading here,
11 it says -- let me see. I mean, it depends. You
12 have to read also in the context. Do they mean
13 just the images? Do they mean additional
14 information like orientation?

15 It could -- image data could mean the
16 image itself, raw data, or it could mean also
17 including maybe additional metadata. I mean, a
18 POSITA could understand many things after that.

19 Q. Okay. So let's unpack this a little
20 bit.

21 So you're saying it could -- image
22 data could mean the image itself, raw data?

23 A. Uh-huh.

24 Q. Or it could mean some additional
25 metadata. What is this some additional metadata?

1 A. Well, in the context of --

2 MR. HEFAZI: Objection. Form.

3 THE WITNESS: Yeah. In the concept of
4 priority, we're talking about sensor data.

5 BY MS. LI:

6 Q. What is the sensor data?

7 A. Well, we just discussed. Angle
8 measurements.

9 Q. Got it.

10 So a POSITA would understand that
11 image data as used here could refer to the -- the
12 image itself or additional metadata, such as sensor
13 data, correct?

14 MR. HEFAZI: Objection to form.

15 THE WITNESS: I didn't say that a
16 POSITA would understand that. I said that
17 it could. A POSITA could understand that a
18 broader -- in broader sense, or it could be
19 just the image data.

20 Now -- can I continue on that
21 question?

22 So, I mean, reading there, it says at
23 paragraph 27, a camera to include a lens 4
24 and a charge-coupled device (CCD) 6, which
25 acts as a sensor to capture image data.

Page 137

1 So it looks like in that paragraph, it
2 refers to image data. Not to anything else
3 but just images captured by the optics and
4 the CCD array.

5 BY MS. LI:

6 Q. Let's look at Figure 3 real quick.

7 A. Sure.

8 Q. Figure 3 shows horizon leveling on an
9 image that's captured as in Figure 3B, correct,
10 because that is tilted?

11 A. We can read through this. Off the top
12 of my head, it says that Figure 3A is how it should
13 have been. What has been captured is 3B.

14 So if you go -- so let's have a look
15 at the paragraph that refers to Figure 3. I think
16 it's paragraph 34.

17 It says, "Figure 3 illustrates the use
18 of the system. Figure 3A shows the image that the
19 user should have taken, i.e., with a camera
20 horizontally aligned. Figure 3B shows the image
21 taken with a camera angle at an angle about 10
22 degrees to the vertical. The true horizontal in
23 the image is thus also at an angle of 10 degrees to
24 the horizontal in the recorded image."

25 I mean, thank you for pointing out

1 this paragraph to me. And I was keeping in saying
2 that, you know, there is one rotation, one
3 measurement.

4 Figure 3 clearly -- again, this
5 description, paragraph 34, is just pointing out
6 that. It just confirms what I even said earlier
7 with paragraph 29, that the combination that
8 Dr. Katsaggelos is using is referring to this
9 paragraph -- one of -- I mean one of the things
10 that he's referring to is Figure 3.

11 So Figure 3 says that it illustrates
12 the use of the system. Figure 3A shows the
13 image -- it doesn't say the images. It doesn't say
14 the video frames. It says the image that the user
15 should have taken, i.e., with the camera
16 horizontally aligned.

17 Figure 3B shows the image taken with a
18 camera angle -- one angle, not many angles -- at an
19 angle of about 10 degrees. It's not talking about
20 plural.

21 So again, as I said, that's what I
22 meant, that, you know, this is the description of
23 Figure 3. It talks about one angle. It talks
24 about one image. I don't see anywhere in this here
25 in this figure even contemplating that we are

1 dealing with video, let alone multiple images.

2 Q. If you go back to paragraph 27.

3 A. Yes.

4 Q. Again, the last sentence we just
5 focused on. It says, "The camera may record either
6 still images or moving images, in the latter case
7 by capturing a sequence of items of image data 8
8 representing sequential frames of the moving
9 images." Correct?

10 A. That's what that paragraph reads.
11 Yes.

12 Q. So it talks about multiple frames,
13 correct?

14 A. Yeah. But again, that paragraph is
15 that way.

16 Again, I keep saying, Dr. Katsaggelos
17 and petitioner relying on Figure 3 and Figures 4
18 through 6.

19 And the disclosure is clear in
20 Thomason that those are images and one angle.
21 There is no disclosure of video for this figure --
22 I mean, when I say "this," I mean Figure 3 or
23 Figure 4 through 6.

24 Figure 3 and 4 through 6 are a single
25 image, one angle. And that's the disclosure of

1 Thomason. I have to go by the text of the
2 disclosed text of Thomason in the prior art and the
3 combination that Dr. Katsaggelos is using.

4 Q. So Figure 3 shows horizon leveling of
5 an image frame based on the rotation amount for
6 that particular image frame, correct?

7 A. Well, let me read that.

8 It says, "Illustrates the use of the
9 system. Figure 3A shows the image that the user
10 should have taken."

11 I don't see anywhere saying image
12 frame. Even if it had said image frame, it
13 wouldn't make any difference because that's not
14 video frame. It's an image frame. But it says
15 image. Singular. Not plural.

16 It says "the image that the user
17 should have taken, i.e., with the camera
18 horizontally aligned."

19 And then it says: Figure 3B shows the
20 image -- it doesn't say image frame -- taken with a
21 camera angle at an angle of about 10 degrees to the
22 vertical.

23 For me, an image is an image. It --
24 but even that, even if it said image frame, that's
25 not video frame. It's an image.

1 Q. A video comprises of multiple images
2 or frames, correct?

3 A. But it's not a 1-to-1 thing. A
4 collection of images doesn't make a video. So
5 first of all, that's one thing. The fact that
6 video comprises of multiple images. So what?

7 I mean, I'm saying that Thomason is
8 disclosing what is in Figure 3. And in Figure 3,
9 it clearly says it's one image and one angle.

10 Q. So listen to my question.

11 A. Sure.

12 Q. A video -- strike that.

13 A skill in the art would understand
14 that a video includes multiple images or frames,
15 correct?

16 A. A video includes -- can be thought of
17 as including multiple images. However, as I said,
18 it's not true the other way around. A collection
19 of images is not making a video.

20 Q. I'm not asking the other way around.
21 But thanks for confirming my question.

22 A. Okay.

23 Q. And Figure 3 of Thomason discloses
24 horizon leveling of an image based on the
25 particular rotational amount for that corresponding

1 image, correct?

2 A. Again, Figure 3 is describing
3 paragraph 34. And I read what it describes. It
4 describes one single image, one angle and
5 correction of that.

6 (Reporter clarification.)

7 BY MS. LI:

8 Q. So the answer to my question is yes?

9 A. I don't know. What was your question
10 again?

11 Q. Figure 3 is describing horizon
12 leveling of an image based on the rotational amount
13 for that particular image, correct?

14 A. That is correct.

15 MR. HEFAZI: Do you want to take a
16 short break?

17 MS. LI: Yeah. Five minutes?

18 MR. HEFAZI: Yeah.

19 (A brief recess was taken from
20 2:01 p.m. to 2:11 p.m.)

21 BY MS. LI:

22 Q. Welcome back, Doctor.

23 A. Thank you.

24 Q. Did you discuss anything relating to
25 your deposition with counsel during your breaks?

1 A. No.

2 Q. Why don't we mark this Exhibit 1006,
3 which is prior art of Watanabe.

4 (Petitioner's Exhibit 1006 was
5 marked for identification.)

6 BY MS. LI:

7 Q. Dr. Foroosh, are you familiar with the
8 prior art Watanabe in front of you, which is
9 Exhibit No. 1006?

10 A. Yes.

11 Q. Okay. Well, let's turn to column 3,
12 line 64.

13 A. Yes.

14 Q. Okay. Actually, hold on a second.
15 Do you see kind of middle of line 64,
16 it says "The present invention can be applied to
17 any electronic device that can perform image shake
18 correction. Such electronic device" -- do you see
19 that?

20 A. Not yet. I'm not there. Line 64, you
21 said?

22 Q. Yes.

23 A. You say it's the middle of the
24 sentence here. So maybe I'm mistaken. You said
25 paragraph 3, line 64.

1 Q. Column 3.

2 A. Column 3. I'm sorry.

3 Column 3, line 64. Unless we
4 understand which one is line 64. For me, line 64,
5 it says -- part of the word is processing apparatus
6 according to an embodiment of the -- is that where
7 we are?

8 Q. Yeah. You can keep reading.

9 A. Oh, I see. Okay.

10 "Processing apparatus according to an
11 embodiment of the present invention will be
12 described below. But the present invention can be
13 applied to any electronic device that can perform
14 image shake correction."

15 Is that the --

16 Q. Yeah. Can you continue to read?

17 A. Sure.

18 "Such electronic devices include image
19 capturing apparatuses, as a matter of course, and
20 personal computers, tablet terminals, mobile
21 phones, game machines, drive recorders, robots,
22 drones, and the like and are not limited thereto."

23 Q. Uh-huh. So Watanabe discloses image
24 shake correction for a mobile phone, correct?

25 MR. HEFAZI: Objection to form.

1 THE WITNESS: Watanabe, in that
2 sentence I read, said that such an
3 electronic device could include -- includes
4 image capturing apparatuses, as that may be
5 any one of these, which is -- one of those
6 items is mobile phones.

7 BY MS. LI:

8 Q. Yes.

9 So Watanabe discloses image shake
10 correction for electronic devices, such as mobile
11 phones, right?

12 A. That's what that sentence reads.

13 Q. Okay. Now, let's look at column 5 of
14 Watanabe starting from line 26.

15 A. Yes.

16 Q. Okay. Do you see that it says: Note
17 that the correction is not limited to correction of
18 translation components of shake performed by
19 changing the cropping position.

20 Do you see that?

21 A. Yes. I see that.

22 Q. Continued to say: And a configuration
23 may be adopted in which rotational components
24 around the optical axis of shake are corrected by
25 affine transformations or tilt components of shake

1 (keystone distortion of an image) are corrected by
2 projection conversion.

3 Do you see that?

4 A. Yes.

5 Q. Okay. So, Watanabe discloses that the
6 correction is not limited to translational
7 components of a shake, right?

8 A. The correction that he is disclosing,
9 the shake correction, corrects image shake is not
10 limited to that.

11 Q. To translation components?

12 A. To translation components.

13 Q. And Watanabe also discloses correcting
14 tilt components of shake, correct?

15 MR. HEFAZI: Objection. Form. Also
16 objection. It's outside of the scope.

17 THE WITNESS: I mean, it says what it
18 says.

19 I mean, on the other hand, I have
20 never addressed any one of these
21 disclosures here in my declaration. And I
22 don't believe it affects my opinion. I
23 mean, I don't know how it is related to
24 combinations that I have addressed,
25 combinations that are stated by the

1 petitioner.

2 I -- what was your question? I'm
3 sorry. I'm lost.

4 BY MS. LI:

5 Q. Watanabe also discloses correcting
6 tilt components of shake, correct?

7 A. Which line is that in Watanabe?

8 Q. Line 31.

9 A. Line 31. Yeah. It says what it says.
10 It says "tilt components of shake."

11 Q. And you do not think it's relevant to
12 your opinions in your declarations?

13 A. Shake correction has nothing to do
14 with my opinion with -- with horizon leveling.

15 Q. Including shake correction for tilt
16 components?

17 A. Shake -- shake correction. Otherwise
18 it would say horizon leveling. Shake correction is
19 shake correction.

20 This -- this patent disclosed by
21 Watanabe is not even mentioning, let alone
22 contemplating, that they do anything with horizon
23 leveling. Horizon leveling is a different --
24 different correction.

25 This is dealing with a camera, a

1 handheld camera. As you said, the cell phone, for
2 instance, that might be shaking when you take a
3 picture. It's saying it's correcting for those
4 shakes.

5 And the disclosures within the patent
6 are actually addressing that. I don't recall
7 anywhere in this patent Watanabe discussing horizon
8 leveling.

9 Q. The image shaking can cause off-axis
10 horizon, correct?

11 A. Where does it disclose this?

12 Q. I'm not asking where does it disclose.

13 A skill in the art would understand
14 that image shake, shakiness of the phone while
15 you're holding it, can cause off-axis horizon.
16 Fair?

17 MR. HEFAZI: Objection. Form.

18 THE WITNESS: As I said, where does it
19 disclose that? I mean, whether it's, you
20 know -- I don't think it's even relevant to
21 the combinations that the petitioner is
22 offering.

23 But again, where does it Watanabe --
24 where does Watanabe say that? When I say I
25 don't see relevance, because where does

1 Watanabe teaches that it's doing horizon
2 leveling and shake would have caused
3 off-axis?

4 You're asking me a hypothetical
5 question. Watanabe is not at all
6 addressing horizon leveling. It's not
7 concerned with horizon at all. It's just
8 concerned with shake.

9 BY MS. LI:

10 Q. I'm not asking you about what Watanabe
11 discloses. This question is -- you're skill in the
12 art, right?

13 A. Yes.

14 Q. You think you're a skill in the art?

15 A. Is that a question?

16 Q. Yes.

17 A. Do I think I'm a skill in the art?

18 Q. Yes.

19 A. I think you know the answer. I
20 answered I'm a POSITA.

21 Q. As a skill in the art, do you
22 understand that image shake can cause off-axis
23 horizon?

24 A. Well, you're asking, again, a
25 hypothetical question. You want me to, on the fly,

1 provide analysis which is beyond the scope of
2 this -- my declaration. You want me to offer an
3 opinion on something that my is -- as I said, to my
4 opinion is irrelevant to our -- to things -- to the
5 statements that I have disclosed in my declaration.

6 I have never offered any opinion
7 whether shaking would affect off-axis -- the impact
8 of the off-axis horizon.

9 Q. So --

10 A. Can I finish?

11 Q. Yeah.

12 A. Neither was Watanabe. In fact,
13 Watanabe does not even address that problem.
14 Watanabe is dealing with camera shake. It has
15 nothing to do with the problem of horizon
16 alignment.

17 Q. So as a skill in the art, you couldn't
18 answer whether image shake can cause off-axis
19 horizon; is that right?

20 Is that your testimony today?

21 A. No. That is not my testimony.

22 I said that my testimony is that I
23 have not offered an opinion on that. And I'm not
24 willing to offer an opinion on the fly on a
25 hypothetical question.

1 Whether it would or it would not, it
2 may require the looking at in many context or many
3 other issues, many parameters that I haven't taken
4 into account. You want me to give you a yes or no
5 answer to something that I haven't looked at. It
6 may depend on many factors.

7 So you want me to just give a straight
8 forward yes or no answer to that. That's why I'm
9 saying that I have not offered an opinion. And I
10 didn't say whether it does or it doesn't. I'm just
11 saying that I'm not offering an opinion on that,
12 and I have not offered an opinion on that.

13 Q. Because you don't think that's
14 important, so you're not offering any opinion?

15 A. What do you recall important?

16 Q. You don't understand what important
17 is?

18 A. Important depends on the context.

19 Q. You don't think it's relevant to the
20 opinions in your declarations. So you're not
21 offering -- you are not answering that question?

22 A. If I had thought that it was important
23 to opinion -- opinions that I offered, then I would
24 have included it in my declaration.

25 Q. So, I think we mentioned earlier

1 the -- about, you know, camera movements. They can
2 move in three different directions or axes,
3 correct?

4 A. I don't remember any discussion on
5 that.

6 Q. Are you familiar with the roll, pitch
7 and yaw axis?

8 A. I am familiar with roll, pitch, yaw
9 axis, yes.

10 Q. Uh-huh. So, are you also familiar
11 with the roll axis? What is it?

12 A. Again, you're asking me to offer, you
13 know, a hypothetical, you know, answer to a
14 question that I think is -- for which I have not
15 offered any opinion.

16 But you're asking basically how many
17 angles in the 3D space can be used to describe the
18 rotation of a rigid object? Yeah. There are 3
19 degrees of freedom of rotation and 3 degrees of
20 freedom of translation.

21 Essentially, you can -- you don't have
22 to, but you can describe it by rotation along three
23 axes. That's your question. Those three axes --
24 it would be sometimes are referred to as yaw, pitch
25 and roll.

1 Q. Okay.

2 A. Not necessarily. And it could be --
3 different names have been used. And it could be
4 that even convention changes the order of these
5 angles. Some people refer to rotation along the Z
6 axis and however they put the Z axis. I mean,
7 there are many conventions for that.

8 Q. Yeah. Can you help me understand like
9 what are the differences between those three
10 different axes?

11 A. Again, I just agree to say -- I'm not
12 offering any opinion on that. I'm not going to go
13 into offering opinion on what the axes are or what
14 are the 3 degrees of freedom. You asked me do I
15 know it. Yes, I know it. But is it relevant to
16 this? No.

17 Unless you show me what the relevance
18 is. I would be more than glad then to discuss.
19 And the only way I can see how you can show the
20 relevance is show me where in my declaration I even
21 refer to that.

22 Q. As a skill in the art, do you
23 understand what is a roll axis?

24 A. You're talking about the three axes
25 that we just described?

1 Q. And the roll axis. Let's start with
2 that.

3 A. Roll axis?

4 Q. Uh-huh.

5 A. Again, I'm not offering an opinion on
6 that, and I have not offered an opinion on this in
7 any one of my declarations.

8 Q. Do you understand -- I'm not asking
9 you to offer opinion. Do you understand what roll
10 axis is? Yes or no?

11 A. Well, it's -- again, as I said, it's
12 not a yes or no answer. Because understanding it,
13 how does that relate to my declaration? That's my
14 question. I don't think I need to offer an opinion
15 on yaw, pitch, roll axis. That's what I'm saying.

16 Okay. Do I understand? Yes. As a
17 POSITA, I understand what yaw, pitch, roll angles
18 are.

19 Q. So tell me. As a POSITA,
20 you understand --

21 A. No, I'm not telling because I'm not
22 offering an opinion on that. That's what I'm
23 telling you. That I'm -- I know what it is. But I
24 think it's irrelevant to our -- you know, to my
25 declaration.

1 I'm here to rebut the declaration of
2 Dr. Katsaggelos. And I don't see any relevance,
3 you know. I'm -- it's not just that -- you're
4 asking me to offer -- go through this hypothetical
5 path and discuss, you know, yaw, pitch, roll. No.
6 I mean, that's -- that's not -- I don't think I'm
7 here for giving a lecture, if you want to, on yaw,
8 pitch, roll and the degrees of freedom on a rigid
9 object. I think I'm here to provide support for my
10 opinions in my declarations and rebut the
11 declaration of the -- of Dr. Katsaggelos.

12 MS. LI: Counsel, it's improper for
13 the witness to say he's refusing to provide
14 an answer based on relevance. He obviously
15 already testified that he understands what
16 that means, and he's refusing to provide an
17 answer.

18 MR. HEFAZI: I think what he testified
19 is that he understands what roll and yaw
20 and pitch are. He's told you what they
21 are. You're asking for --

22 MS. LI: He has not.

23 MR. HEFAZI: -- rigid definitions and
24 constructions of the terms "roll, yaw and
25 pitch." I think he's saying he doesn't

1 understand where those opinions are and the
2 basis.

3 You can ask him questions about it,
4 but if he doesn't have opinions on what the
5 definition or what a construction of
6 roll --

7 MS. LI: That's not --

8 MR. HEFAZI: You addressed me.

9 MS. LI: You're coaching the witness.

10 MR. HEFAZI: No. You addressed me.
11 So you asked me and you addressed me. So
12 I'm just telling you.

13 As I understand it, you can ask him
14 questions. But what he's telling you is
15 that he's -- he hasn't provided opinions on
16 the construction of those terms.

17 MS. LI: I'm not asking for any
18 construction.

19 BY MS. LI:

20 Q. You said you understood as a skill in
21 the art what is yaw, pitch and roll. So tell me
22 what is your understanding of roll. Let's start
23 with roll.

24 MR. HEFAZI: So just to answer your
25 question, I don't think he's refusing to

1 answer your question. And you can continue
2 asking --

3 MS. LI: Let's find out if he
4 continues to refuse. And that's going to
5 be an issue.

6 THE WITNESS: I'm sorry. But I did
7 not refuse to answer. I actually answered
8 your questions.

9 I said I knew what yaw, pitch, roll
10 are. And I said there are many
11 conventions. But you're asking me to -- to
12 define them for you. I said I'm not going
13 to do that.

14 BY MS. LI:

15 Q. That's not my question.

16 A. Okay. What is your question?

17 Q. So I want you to listen to my question
18 carefully. What is your understanding of --

19 MR. HEFAZI: Counsel, please don't,
20 like, aggressively move towards the witness
21 and point. Like, let's stay calm.

22 BY MS. LI:

23 Q. What is your understanding of roll?

24 A. Basically you're paraphrasing define
25 me roll, pitch -- yaw, pitch, roll. You're

1 paraphrasing this idea. You're saying what is your
2 understanding. You're telling me give me your
3 definition of that. So that's what I'm saying.
4 I --

5 Q. I am not asking you for a definition.
6 My question -- again, I want you to
7 listen carefully.

8 A. Okay.

9 Q. And we can be staying here for a long
10 time if you are refusing to answer --

11 A. I'm not refusing to answer your
12 question.

13 Q. Okay. Well, let's see whether you
14 continue to do that.

15 So my question is, what is your
16 understanding of roll?

17 A. Roll angle is one of the --

18 Q. Roll axis.

19 A. Roll axis is the -- is the axis along
20 which the roll angle is measured.

21 Q. What is the roll angle?

22 A. So you see, you want me to give you
23 constructions on everything now. You're saying
24 that you don't want me to do that, but you're
25 asking me step by step to.

1 You see, as I told you, there are
2 multiple conventions out there. I'm not -- give me
3 the context of a particular prior art, for
4 instance, and say what do they mean by that.

5 Q. I don't need to give you a particular
6 context of prior art.

7 I'm asking you, what is your
8 understanding of the roll axis. And you gave me
9 something relating to roll angle. So what is your
10 understanding of roll angle?

11 A. It's a degree of freedom of rotation
12 in the 3D space. That's -- I mean, that's as broad
13 as I can get.

14 But if you want me to make it very
15 specific, it depends. You know, as I told you,
16 there are many different conventions. Different
17 people refer to different angles. Even the choice
18 of the coordinate system affects that.

19 So you're trying to give me -- to make
20 me fix to give one specific -- you said what is
21 your understanding. That's another -- the way I
22 see it, that you want me to give a definition. As
23 I told you, I have not offered an opinion on the
24 definition of the roll angle or roll axis.

25 Q. So how is roll different from pitch

1 and yaw?

2 A. Those are three different axes
3 orthogonal to each other.

4 (Reporter clarification.)

5 THE WITNESS: Axes that are orthogonal
6 to each other.

7 BY MS. LI:

8 Q. Uh-huh. And you also mentioned
9 earlier that roll refers to X axis, right?

10 A. No. I never said that. I --

11 Q. Does roll refer to Y axis?

12 A. Again, so I never said that. I never
13 talked about X and Y.

14 So as I said, it depends on the
15 convention. That's why I said give me the prior
16 art. I don't know how to -- what convention is
17 used and what coordinate system is placed. Is
18 it -- it even depends whether the coordinate system
19 -- there are many coordinate systems. I mean,
20 there is no single way of defining it.

21 And you want me to zero down and
22 pinpoint to give you one construction, one
23 definition. And I think -- I've never done that.
24 I have not offered no opinion on that. And that's
25 what I'm saying, that I'm not willing to do that on

1 the fly because it requires context. It requires
2 more analysis of what we are talking about. So
3 it's not just, you know, an isolated definition I
4 can give you.

5 Q. So what else does a skill in the art
6 understand from your perspective about the roll
7 axis?

8 MR. HEFAZI: Objection. Form.

9 THE WITNESS: Again, we are -- we are,
10 you know, going around. And this is the
11 same question paraphrased.

12 I'm not offering any opinion on the
13 definition or construction of the roll axis
14 or roll angle. I've never offered one,
15 although I think also that it's not
16 relevant to the obviousness case here.

17 But regardless of that, I've never
18 done that in my -- in the opinions that I
19 have expressed. And as I said, it depends.
20 It depends, you know, on the choice of
21 coordinate systems. It depends on many
22 different things.

23 So to try and to get me to say what
24 roll axis is? I can go as far as saying
25 that in the broadest sense, in the most

1 general sense, a degree of freedom of a
2 rigid object's rotation in 3D space.

3 BY MS. LI:

4 Q. So, is it fair that the object can
5 move in those roll, pitch and yaw axes, those three
6 different directions?

7 A. You mean rotate? Because when we talk
8 about roll, pitch -- yaw, pitch, roll, we are
9 talking about angles. So those are rotations.

10 Yeah. A solid, rigid object could
11 potentially rotate along any one of those three
12 axes. But again, I -- this is -- this depends on a
13 lot of things. It's a convention, how you put your
14 coordinate systems.

15 So, an object in the 3D space rotates.
16 If I put my coordinate system -- set up my
17 coordinate system in a certain manner, those angles
18 change. And it's even known that the rotation does
19 not commute. It's not commuted to operation.

20 So there are so many things. I don't
21 want to get into the details of the technical
22 aspect. But it's not asking for us, if -- here is
23 the definition of what roll angle is or yaw angle
24 is.

25 Q. Does Watanabe limit the camera shake

1 or movement to any of those three axes?

2 A. Watanabe is more like -- it limits it
3 to shake. So -- and as I said earlier, regardless
4 of how many degrees of freedom Watanabe is limited
5 to, it's not at all the horizon leveling. It's a
6 different problem. Watanabe is dealing with a
7 completely different problem. It's dealing with
8 camera shake. The term "horizon leveling" doesn't
9 even appear in Watanabe.

10 Q. Let's set aside horizon leveling.

11 But Watanabe does not limit the
12 camera's shake to any of those three axes. Fair?
13 I'm talking about the shake here.

14 A. I haven't offered any opinion on that.
15 I believe that whether it limits to any angles, I
16 haven't offered any opinion on that.

17 Q. Okay. But you cannot -- sitting here
18 today, you cannot point to me any disclosure in
19 Watanabe that limits the camera shake to any of
20 those three axes, correct?

21 A. I can either -- I mean, I cannot do --
22 I cannot do either or -- I mean, I have not offered
23 an opinion on that, that -- whether it includes or
24 limits to certain angles. I've never offered any
25 opinion on that.

1 Q. I'm giving you an opportunity to offer
2 it. But if you don't have it, that's fine.

3 Does Watanabe say, when I'm talking
4 about shake, it cannot shake in the roll direction?

5 MR. HEFAZI: Objection to form.

6 THE WITNESS: Same answer. I didn't
7 offer an opinion on that because what I was
8 concerned about Watanabe is what Watanabe's
9 disclosing in terms of what it is doing and
10 the purpose of Watanabe. And they want to
11 do shake correction. And I mean, it's one
12 of the things they do, shake correction.

13 So, that's what -- and I believe that
14 that in no shape or form, it's
15 corresponding to combinations that Watanabe
16 is using both in Grounds 2 and 4, I believe
17 is off the top of my head. Watanabe is
18 using Grounds 2 and 4 for Claims 3 through
19 6.

20 Watanabe is dealing with camera shake.
21 It's not dealing with the -- so I did not
22 think it was relevant for me to even offer
23 an opinion on -- on the number of degrees
24 of freedom it is addressing.

25 BY MS. LI:

1 Q. So in forming your opinions in your
2 declaration, you do not consider whether Watanabe
3 limits the camera shake to any of the roll, pitch
4 and yaw axes, correct?

5 A. I -- I looked at Watanabe as disclosed
6 by petitioner and Dr. Katsaggelos and the
7 combinations that he has provided. And I expressed
8 opinion -- my opinion on those combinations.

9 Q. So did you consider or not? Your
10 answer is nonresponsive.

11 MR. HEFAZI: I disagree with that.
12 Objection to form.

13 THE WITNESS: It is responsive because
14 I just said that I addressed the
15 combinations. And so my opinions are
16 formed based on the combinations that I
17 rebut, if you want to, the combinations
18 that are provided -- that were provided by
19 Dr. Katsaggelos and the petitioner.

20 BY MS. LI:

21 Q. It's not your opinion that Watanabe
22 limits the camera shake to any of the three axes,
23 right?

24 A. I have no opinion either way. And
25 again, I express no opinion whether it limits to a

1 particular angle or angles. I did not express any
2 opinion on that.

3 Q. But you cannot point to any disclosure
4 in Watanabe, sitting here today, that limits the
5 camera movement to any of those three axes?

6 A. Well, as I said, I have no opinion on
7 that.

8 Q. I'm trying to give you an opportunity
9 to point me to the evidence. So one more time.

10 Sitting here today, there's nothing
11 you can point me right now that shows Watanabe
12 limits the camera movement to any of the three
13 axes?

14 A. And my answer is the same. I don't
15 know what you mean. You're trying to give me an
16 opportunity. And thank you for the opportunity.
17 But I gave you the answer.

18 My answer is that I did not offer an
19 opinion on that. I offered an opinion on the
20 combinations that were provided by Dr. Katsaggelos.
21 Watanabe, as a context of the combinations, Ground
22 2 and Ground 4. I did not offer any opinion how
23 many degrees of freedom Watanabe is limited to or
24 is limiting to. None of -- unless you refer me to
25 my declaration and show me, Hey, here it is, you're

1 saying this. I mean, please go ahead and do that.

2 Q. Okay. So if Dr. Katsaggelos says that
3 Watanabe is not limited to camera movement in any
4 of the three axes, would you agree or disagree?

5 MR. HEFAZI: So objection to the
6 extent that Dr. Katsaggelos hasn't provided
7 any such opinion yet.

8 THE WITNESS: But my answer to you
9 remains the same.

10 I rebutted Dr. Katsaggelos's combin-
11 -- opinions in terms of the combinations
12 that he provided. And if I'm not
13 addressing them, is I'm not rebutting
14 something that -- he hasn't -- you're
15 saying -- you're putting some hypothetical
16 situation. You want me to put in some
17 hypothetical situation.

18 If Dr. Katsaggelos offers or he had
19 offered, would you do that. Well, it's not
20 there. I mean, I'm not addressing --
21 and it's something that is not in the
22 combination. And I did not offer an
23 opinion on that.

24 BY MS. LI:

25 Q. So you don't know if Watanabe limits

1 camera shake to any of the three axes?

2 MR. HEFAZI: Objection. Form. Also
3 to the extent outside the scope of the
4 opinions in the petition.

5 THE WITNESS: I never said that. I
6 didn't say I don't know. I do know. I
7 said -- my answer is different, completely
8 different. You keep coming back.

9 I just told you. I did not offer an
10 opinion. And, you know, it was not part of
11 my declaration.

12 BY MS. LI:

13 Q. My question is, do you know if
14 Watanabe limits camera shake to any of the three
15 axes?

16 A. Same answer. I have no opinion on
17 that, and I did not offer an opinion on that.

18 Q. I'm not asking about your opinion.
19 I'm asking whether you know or not. Either you
20 know or you don't.

21 A. Well, again, it wasn't part of
22 combinations. So I did not have to offer an
23 opinion. You want me to offer an opinion. Yes,
24 you do. You're asking me is it limiting to one
25 angle, two angles.

1 I'm offering no opinion on that. You
2 know, I don't think it's -- it's an opinion that I
3 have offered in my declaration. Otherwise, please
4 show me which paragraph in my declaration. I would
5 be more than glad to discuss it.

6 Q. So, the answer to my question is, do
7 you know whether Watanabe limits the camera
8 movement to any of three axes. Your answer is you
9 don't know?

10 A. I never said that.

11 Q. Then you know?

12 A. I never said I do not know. I never
13 said I know. I said I'm not offering an opinion.
14 I did not offer an opinion on that because I think
15 that it's not part of the combination. So I'm here
16 to rebut combinations that were provided by
17 Dr. Katsaggelos. And I did not offer an opinion on
18 that.

19 Q. I'm not asking for your opinion. I'm
20 just asking, do you know -- do you personally
21 know -- you're familiar with Watanabe, correct?
22 You reviewed the prior reference?

23 A. Sure.

24 Q. How many times have you reviewed the
25 prior reference?

1 A. Which paragraph of Watanabe that I
2 have cited in my declaration? Please show me my
3 declaration.

4 Q. How many times have you reviewed --

5 MR. HEFAZI: Please wait. Wait.

6 Lily, wait. Please don't, like, cut off
7 the witness. I mean, I'm letting you have
8 a lot of leeway here.

9 You're saying -- you're asking
10 questions outside the scope of the
11 opinions. I'm letting you have a lot of
12 leeway. Please don't interrupt the
13 witness.

14 MS. LI: Go ahead.

15 THE WITNESS: So I'm saying that my
16 answer is the same because I said to show
17 me where in my declaration I have offered
18 an opinion on that, and I would be more
19 than glad.

20 So, Watanabe may include a lot of
21 other things that were not included in the
22 combinations. And I -- I had -- I did not
23 have to offer opinions on them because I'm
24 rebutting the portions -- now, how many
25 degrees of freedom are disclosed by

1 Watanabe? I'm saying that I didn't offer
2 an opinion on that, and I'm not offering an
3 opinion now because it's not part of the
4 combination.

5 And now how many times I read
6 Watanabe? I don't know. Going back to
7 your question. Whatever number, I don't
8 remember. This case has been, you know,
9 started maybe a year ago. I don't
10 remember. Back in 2024 definitely. So
11 I've probably read Watanabe multiple times
12 before coming here. So to answer your
13 question of how many time have I read
14 Watanabe.

15 So, but, I have limited my opinion on
16 Watanabe on what was used in the
17 disclosures of Dr. Katsaggelos and the
18 petitioner.

19 So, I didn't go and offer opinion on
20 every single paragraph and line of
21 Watanabe. So, that's what I'm saying.

22 BY MS. LI:

23 Q. So, you testified you have read
24 Watanabe several times. And I represent to you
25 neither of your declarations cite to any evidence

1 that Watanabe limits the camera movement to any of
2 the three axes, roll, pitch or yaw.

3 Sitting here today, is there anything
4 you want to add?

5 MR. HEFAZI: Objection to form.

6 BY MS. LI:

7 Q. Evidence. Sitting here -- sorry. Let
8 me withdraw.

9 Sitting here today, is there any
10 evidence or disclosure from Watanabe you would like
11 to add?

12 MR. HEFAZI: Objection. Form.

13 THE WITNESS: I -- again, I'm going to
14 go back to my initial answer.

15 You know, show me where in the
16 declaration I have offered an opinion. I'm
17 not going beyond the opinions that I have
18 offered in my declaration.

19 If that's your question, you want me
20 to offer an opinion beyond my declaration,
21 no. I'm here to rebut the declaration of
22 Dr. Katsaggelos and offer, you know, say,
23 you know, what I have stated, you know, in
24 support of my declaration.

25 If I did not offer an opinion on the

1 -- what angles are limited to or not
2 limited to, because I'm not offering an
3 opinion on that. I'm sitting here. I'm
4 not going to add anything to my declaration
5 on the fly.

6 BY MS. LI:

7 Q. Okay. Okay. Let's turn to column 5,
8 line 36.

9 A. Column 5 of which exhibit?

10 Q. Watanabe. We're not done with
11 Watanabe yet, unfortunately. Exhibit 1006.

12 A. Which row?

13 Q. Column 5, line 36.

14 A. Line 36, you said? Yes.

15 Q. So, it reads: A distortion addition
16 circuit 108 reads out from the image memory 105, an
17 image in which distortion and image shake have been
18 respectively corrected by the distortion correction
19 circuit 106 and the image shake correction circuit
20 107, adds the effect of distortion caused by the
21 photographing lens 102 to this image.

22 Do you see that?

23 A. Yes.

24 Q. Okay. So focus on the last part I
25 just read. Watanabe discloses adding back the

1 distortion effect caused by the lens, correct?

2 A. I would remove the word "back." It's
3 adding distortion to -- if that paragraph -- but it
4 also shows that this is -- this is a step that's
5 coming after certain other steps. And those steps,
6 you know, include many other things, among other,
7 removing a distortion, recentering the central
8 distortion by shake correction because we are --
9 after removal of the distortion, you perform shake
10 correction. And then adding distortion at the
11 corrected center and different amount of correction
12 based on what Watanabe discloses that is reducing
13 the distortion by a significant amount, by
14 something like 30 percent of the original
15 distortion.

16 I mean, continue on that. Watanabe is
17 basically disclosing an imaging apparatus that is
18 working with fisheye lens that -- fisheye lenses or
19 it says that, you know, barrel distortion. But it
20 says there's this big distortion in the input
21 image. And it says that if you try to do shake
22 correction, first you need to remove that and then
23 you need to perform shake correction, recenter and
24 add a different amount of -- smaller amount of
25 distortion to the output shake-corrected image.

1 Q. Now, let's just focus on this
2 paragraph that I just pointed you to. Okay? It
3 disclosed adds the effect of distortion caused by
4 the photographing lens 102 to the image, correct?

5 A. Which line?

6 MR. HEFAZI: Line 39.

7 MS. LI: 39 to 41.

8 THE WITNESS: Yeah. It says: Adds
9 the effect of distortion caused by the
10 photographing lens, the 102 to this image.

11 Is that the sentence you're referring
12 to?

13 BY MS. LI:

14 Q. Yes.

15 A. Okay. I can see that. I read that.

16 Q. So, I mean, just to make sure there's
17 no dispute that Watanabe discloses this, right?

18 A. Sure.

19 Q. And this paragraph is not mentioned in
20 your declarations, correct?

21 A. I do not remember whether it is
22 disclosed or not.

23 But, as I said, you're -- the way I
24 see it, you're just cherry-picking certain
25 sentences. This paragraph is coming in the

1 context. That's why I was trying to put the
2 context.

3 It's saying that even in that
4 paragraph that this is after shake correction. So
5 there's steps that have come before this. This
6 addition of distortion in that line 39 says: Adds
7 the effect of distortion caused by the
8 photographing lens 102 to this image. There are
9 multiple steps before that.

10 Q. But you would agree with me that
11 that's not cited in your declarations, correct?

12 A. I do not recall either way. But if
13 you're saying that I have not cited, then I have
14 not cited to that particular paragraph.

15 Q. You don't think that particular
16 paragraph is relevant to your opinions?

17 A. I have cited everything that I thought
18 was relevant in my declaration.

19 And now, unless you tell me how this
20 would change anything in my opinion, I would be
21 more than glad to discuss it. I don't think that
22 paragraph is presenting anything that would have
23 changed anything in my opinion.

24 Q. And for the things that you do not
25 cite for the disclosures in Watanabe, you do not

1 cite in your declarations, you don't think them to
2 be relevant to your opinions?

3 MR. HEFAZI: Objection. Form.

4 THE WITNESS: I did not talk about
5 relevance or non-relevance.

6 I said that reading that sentence, I
7 do not believe that that would have
8 affected my opinion in any shape or form.
9 My opinions remain the same about Watanabe
10 unless you show me how that would affect
11 any opinion.

12 BY MS. LI:

13 Q. Okay. Let's go to column 10, line 2.

14 A. Column 10, you said, line 2? Yes.

15 Q. Do you see that it says, "The degree
16 of a distortion effect that is added by the
17 distortion addition circuit 108 can be
18 appropriately determined in a range not exceeding
19 the intensity of distortion caused by aberration of
20 the photographing lens 102"?

21 Do you see that?

22 A. Yes.

23 Q. What's your understanding of not
24 exceeding?

25 A. I mean, the plain and customary

1 meaning of not to exceed. It means not going
2 beyond.

3 Q. It could also mean equal to?

4 A. Well, maybe. So, talking about less
5 than a week or two or is it just less than?

6 Q. Less than a week or two?

7 A. I don't know -- excuse me.

8 That sentence doesn't make it clear
9 that equal is included there or not.

10 Q. Do you think equal is included?

11 MR. HEFAZI: Objection. Form.

12 THE WITNESS: I think that, again, I
13 have not expressed any opinion on that.
14 And I don't think that would affect any one
15 of my opinions, whether equal is included
16 or not. So I have not expressed any
17 opinion exceeding -- the word "exceeding"
18 -- "not exceeding," rather.

19 BY MS. LI:

20 Q. Sorry. Go ahead.

21 A. I did not provide a construction for
22 not exceeding. Put it this way. I mean, I -- you
23 know, I said that -- okay. I just told you that
24 plain and customary meaning of not exceeding, not
25 going beyond something.

1 But I did not provide any plain and
2 customary meaning of it. I mean, I did not even
3 provide any construction for not exceeding anywhere
4 in my declaration.

5 Q. What does exceed mean to you?

6 A. You mean the plain and customary
7 meaning of the word?

8 Q. Yes.

9 A. To exceed means to go beyond.

10 Q. Go beyond means to be greater than?

11 A. It could mean that, yes.

12 Q. Okay. Let's go to Figure 5 of
13 Watanabe.

14 A. Figure 5, you said.

15 Q. Yes.

16 A. Yes.

17 Q. Are you familiar with Figure 5?

18 A. Yes.

19 Q. Okay. What does the Image 53 show?

20 A. You mean this figure here? I believe
21 it shows that this recentering of the -- so, we
22 need to go back to -- I need to go back to remind
23 you what image -- it states -- Watanabe says that
24 one of the things -- one of the problems it
25 addresses is image shake correction. One of the

1 things -- steps it does is image shake correction,
2 rather.

3 So first, it removes the distortions,
4 the original distortions caused by, let's say,
5 fisheye lens. That's Figure 51 to Figure 52. So
6 Figure 51 is the original image with fisheye lens
7 distortion.

8 (Reporter clarification.)

9 THE WITNESS: With fisheye lens,
10 fisheye distortion.

11 And then that's the captured image, as
12 this figure is referring to. And then once
13 you perform removal of distortion, you get
14 Figure 52.

15 And then it shows that because of
16 shake -- or it discloses that because of
17 camera shake, the center is not exactly the
18 center of the image. The center where we
19 want to crop. So we're going to crop. So
20 we're going to do removal of camera shake.
21 And say that, however, the center of the
22 cropped region is not the same as the
23 center of the original image. So that's
24 what Figure 53 is showing.

25 Was that your question?

1 BY MS. LI:

2 Q. So, for the cropped region in Image
3 53, does it always have to be off center?

4 MR. HEFAZI: Objection. Form.

5 THE WITNESS: It's not the question of
6 does that have to be. But that's what --
7 that's what Watanabe is disclosing.

8 Whether it has been to be -- I mean, again,
9 I'm not forming an opinion on that.

10 Watanabe is disclosing that if the
11 camera is shaking, the center of the
12 cropped region where we are limiting to the
13 portion that -- you know, from one image to
14 the next one, we remove the shake. The
15 center of that cropped region is not going
16 to be the same as the center of the
17 original image.

18 BY MS. LI:

19 Q. Does Watanabe say that the center of
20 the cropped region will never be the center of the
21 entire image?

22 A. I did not make -- you know, offer an
23 opinion whether it says never or sometimes or
24 anything like that.

25 I'm just saying that that's what

1 Watanabe is disclosing. It's saying that once you
2 remove the distortion, which gives you Figure 52,
3 to eliminate the shake or remove the shake, you're
4 going to be cropping each of these images. You're
5 going to crop the image.

6 So, when you're cropping the image,
7 the center of that cropped region is not the same
8 as center of the -- of the original image.

9 Q. But you cannot identify -- you cannot
10 identify any disclosure in Watanabe that says the
11 center of the cropped region can never be the same
12 as the center of the bigger image, correct?

13 MR. HEFAZI: Objection. Form.

14 THE WITNESS: If you are -- let's say
15 you have ten images and you are cropping
16 one of them, the center is not. It's going
17 to force all the other images to have
18 different centers, the center of the image
19 also, because you want to limit it to that
20 cropped region.

21 Now, of course, it shakes. So it is
22 going to be different areas. But, you
23 know, as I said earlier, Watanabe is not
24 making -- he's not offering -- Watanabe is
25 not offering it either way. It's not

1 saying that the center can be sometimes or
2 never at the center of the image.

3 What Watanabe is disclosing is that
4 the center, when you're cropping, is not
5 the same as the center of the image.
6 That's what it is disclosing. I mean,
7 that's what that figure is disclosing.

8 Unless you tell me that, no, you know,
9 sometimes it can be and you can tell me
10 why. Then that's a separate issue.

11 Watanabe is disclosing that. The
12 center is not the same.

13 BY MS. LI:

14 Q. But there's no disclosure in Watanabe
15 that you can point to that says the center cannot
16 be the same, correct?

17 MR. HEFAZI: Objection. Form.

18 THE WITNESS: Again, Watanabe is
19 disclosing the center is not going to be
20 aligned with the center of the cropped
21 region. It's not disclosing whether
22 sometimes it can be never, never it cannot
23 be. He doesn't even get into that.

24 I mean, you want me to expand on
25 Watanabe. I cannot do that. I have to go

1 by what Watanabe is disclosing.

2 BY MS. LI:

3 Q. Yeah. So there's no disclosure that
4 you can point me to from Watanabe that says the
5 center of the cropped image and the bigger image
6 cannot be the same, correct? There's no disclosure
7 you can point me to that?

8 A. Yeah. But there is a disclosure that
9 says that it is not. The center is not the same as
10 the center of the image. That is disclosed.

11 Q. I think we agree that as shown in
12 Figure 5 right now, this example, they're not the
13 same.

14 But my question is, you cannot point
15 me to any disclosure in Watanabe that says the
16 center of the cropped region and the center of the
17 bigger image cannot be the same, correct?

18 MR. HEFAZI: Objection. Form.

19 THE WITNESS: Well, again, so, then, I
20 have to get into -- this is the combination
21 that Dr. Katsaggelos used. This figure is
22 the one that he was referring to.

23 And it's referring to -- you're saying
24 that only -- this figure shows it. But
25 that doesn't mean it's not and it cannot be

1 the same. I don't know. I mean, Watanabe
2 is not disclosing that to start with.

3 Secondly, Dr. Katsaggelos is not
4 referring to anything like that. So I did
5 not offer an opinion on that. Because
6 whether Katsaggelos is -- you know, it's
7 the center could be the same or not. I did
8 not offer an opinion on that.

9 You know, I offered an opinion on what
10 Watanabe is disclosing, and I offered
11 opinions on what Dr. Katsaggelos is using
12 in offering his opinions.

13 BY MS. LI:

14 Q. You understand that the figures,
15 included the Figure 5, in Watanabe is an embodiment
16 of Watanabe?

17 A. Sure. Figure 5 is an embodiment of
18 Watanabe.

19 Q. Your declaration -- your supplemental
20 declaration states that in the context of Watanabe,
21 the cropped portion of the image is often located
22 off center from the original image.

23 Do you still stand by that statement?

24 A. Can you show me which --

25 Q. Paragraph 53. I just told you.

1 A. Paragraph 53 of my declaration?

2 Q. Supplemental declaration.

3 A. Supplemental declaration.

4 Okay. So which line? Is it on page
5 22 because the paragraph continues.

6 Q. Just read the first portion, "Because
7 the cropped portion of the image is often located
8 off-center from the original image." Let's talk
9 about that.

10 Do you stand by this statement in your
11 declaration?

12 A. Sure. I stand by every statement in
13 my declaration.

14 Q. Is there anything you would like to
15 change for this statement?

16 A. No. This is -- this is my statement.

17 Q. Correct. And the statement, you said
18 often. You did not say must or always, correct?

19 A. I say "often located off-center."
20 That is correct.

21 Q. Okay. Yeah. Okay.

22 Let's switch to another exhibit.

23 MS. LI: Let's mark this Exhibit 1007,
24 which is prior art Voss.

25 (Petitioner's Exhibit 1007 was

Page 187

1 marked for identification.)

2 MS. LI: Actually, would you like a
3 short break?

4 MR. HEFAZI: Unless Dr. --

5 THE WITNESS: No. We can go.

6 BY MS. LI:

7 Q. Okay. Let's do that. Okay. Give me
8 a second.

9 Okay. Let's also have this marked.
10 Exhibit 1002.

11 (Petitioner's Exhibit 1002 was
12 marked for identification.)

13 MS. LI: This is the declaration of
14 Dr. Katsaggelos in these IPR proceedings.

15 BY MS. LI:

16 Q. And Dr. Foroosh, you're familiar with
17 prior art Voss?

18 A. Yes.

19 Q. Okay. Let's turn to page 119 of
20 Exhibit 1002, which is the declaration of
21 Dr. Katsaggelos.

22 A. Can you please repeat what page or
23 paragraph you said?

24 Q. 119.

25 A. 119?

1 Q. Yeah.
2 A. That's the paragraph; is that right?
3 Q. Yes.
4 A. Yes.
5 Q. Oh, sorry. That's the page number.
6 A. That's page number. Page 119.
7 Q. Yes.
8 A. Okay. I'm there.
9 Q. Yeah. Okay. You see there's an
10 annotated Figure 2 of Voss.

11 Do you recognize that figure from
12 Voss?

13 A. Yes.

14 Q. Okay. And do you see that there's
15 blue-shaded boxes?

16 A. Yes.

17 Q. Okay. So let's focus on the blue
18 boxes. You see three blue boxes in this annotated
19 Figure 2, right?

20 A. Yes.

21 Q. And do you see that the -- how the
22 blue box rotates with respect to the position of
23 the device?

24 A. Actually, the blue box doesn't rotate.
25 It appears that it's changing aspect ratio. What

1 rotates is 220.

2 Q. Yeah. But the respective position of
3 the blue box -- sorry. Let me strike that.

4 The blue box position relative to the
5 device 220 -- you know, the big rectangle changes,
6 right, in those three images?

7 A. Again, I'm going to say the same
8 thing, is that the blue box is not actually
9 rotating based on this image. It's the actual box
10 220, which -- and 230 and 240 -- well, actually,
11 it's not even 220. In the other ones, it's not
12 labeled. It's just in the first image, it's
13 labeled as "220." That's the one that is rotating.

14 The blue box looks like -- you know,
15 from the first image on the left to the third
16 image -- and the second image next to it and the
17 third image. The blue box is actually staying
18 horizontal. It's not -- it's not rotating.

19 Q. I'm not talking about the absolute
20 rotation of the blue boxes. I'm talking about the
21 rotation of the blue box relative to the bigger
22 box, 220, 230 or 240.

23 A. Yeah. I understand.

24 I'm just saying that even relative, I
25 don't know which one is rotating. Is it the blue

1 box that is rotating relative to 22 -- 220. I'm
2 sorry 220. Or is it the 220 that is rotating
3 relative to the blue box --

4 Q. Okay.

5 A. -- in that depiction?

6 Q. Either way.

7 A. Yeah. There's a relative rotation
8 between them.

9 Q. Okay. Okay. So you mentioned earlier
10 that these three blue boxes, they have different
11 aspect ratios. You see on the right-hand side,
12 that blue box on the right-hand side?

13 A. Yes. I see that. You mean the one
14 that is labeled "240" for the right box?

15 Is that the one you're referring to?

16 Q. Right.

17 And within that, there's a blue box?

18 A. The blue box.

19 Q. Yes.

20 A. Okay.

21 Q. And then that blue box from Figure 2
22 is the largest compared to, you know -- among the
23 three blue boxes as shown in Figure 2, right?

24 A. Okay. One could just by the naked eye
25 say yes, it appears larger than the other two.

1 Q. Yeah. And then the middle one, if you
2 look at in the middle within this 230, relatively
3 it's the smallest among the three, right?

4 MR. HEFAZI: Objection. Form.

5 THE WITNESS: Again, you know, looking
6 at it, it looks smaller. But you're asking
7 me to do measurement? I don't know. With
8 the naked eye.

9 BY MS. LI:

10 Q. I'm not. I'm not asking for a precise
11 measurement. Just like, you know --

12 A. Maybe. Maybe not. I don't know.

13 And also, I haven't expressed any
14 opinion on the -- on the size differences between
15 the figure on the left and the figure in the middle
16 and the figure on the right. But anyhow, maybe.

17 Q. Okay. Those in blue boxes, they cover
18 different portions of the clouds within those,
19 right?

20 A. They may do. Yes. Maybe.

21 Q. And, let's look at -- go back to Voss,
22 which is Exhibit No. 1007. Let's look at Figure 4.

23 A. Figure 4, you said?

24 Q. Yes. Correct.

25 A. I'm missing -- oh, Figure 4. Yes.

1 Q. Yes. And you see there is a box
2 labeled as "440"?

3 A. Yes.

4 Q. And as described in Voss, this 440 is
5 described as the inscribed rectangle. So this box,
6 440, as shown in Figure 1 is not centered in this
7 larger image, correct?

8 A. Correct. It's not centered in this
9 larger image.

10 Q. Now let's look at Voss, page 10, line
11 17.

12 A. Page 10. Which line you want me to...

13 Q. Line 17.

14 A. 17. Okay.

15 Q. Yeah. Do you see starting with "For
16 example"?

17 A. Line 17. Yes. For example.

18 Q. Yeah. "If the optimal output
19 dimension is 4:3 and the sampled rectangle is 1:1,
20 the sampled rectangle would either be aspect filled
21 (fully filling the 1:1 area optically, cropping
22 data as necessary)."

23 Do you see that?

24 A. Yes.

25 Q. It goes on to say: Or aspect fit

1 boxing -- sorry. Let me reread that.

2 It goes on to say, "Or aspect fit
3 fully fitting inside the 1:1 area optically,
4 blacking out any unused area with 'letter boxing'
5 or 'pillar boxing'."

6 Do you see that?

7 A. Yes.

8 Q. And you understand what's pillar
9 boxing, right?

10 A. Well, in the context -- they're
11 putting the quotes.

12 (Reporter clarification.)

13 THE WITNESS: In between -- single
14 quotes. So, yeah. In the context, yes.

15 BY MS. LI:

16 Q. And it's basically the -- that says
17 it's basically blocking out --

18 A. Yes.

19 Q. -- any unused area.

20 And pillar boxing does not mean
21 cropping, correct?

22 A. Yeah. But I believe earlier, they
23 talked about cropping.

24 For example, optimal output dimension
25 is 4:3 and the sampled rectangle is 1:1, the

1 sampled rectangle would either be aspect filled,
2 fully filling the 1:1 area optically, cropping data
3 as necessary.

4 It says cropping there.

5 Q. Yeah. I want to focus on "or." You
6 see after cropping data as necessary, there's "or,"
7 the other half of this sentence?

8 A. Sure. I mean, I haven't offered an
9 opinion if pillar boxing would crop anything.
10 Maybe it does. Maybe it doesn't. But I know the
11 word "cropping" appeared there.

12 Q. Yeah. But let's talk about the aspect
13 -- again, let's focus on the sentence that reads:
14 Or aspect fit, fully fitting inside the 1:1 area
15 optically, blacking out any unused area with a
16 letter boxing or pillar boxing.

17 Did the sentence that I just read, the
18 latter half starting with "or," mention anything
19 about cropping?

20 A. Well, the latter part of the sentence
21 you read, it doesn't say the word "cropping." But
22 it doesn't mean that no cropping is happening. I
23 didn't offer any opinion on whether pillar boxing
24 or letter boxing could potentially do any cropping.
25 Maybe. Maybe not.

1 Q. Okay. So you do not quote the full
2 sentence of this -- you know, what we were just
3 looking at from page 10, line 17 to 21 in your
4 declarations, correct?

5 A. I don't remember. So if you said
6 so -- I mean, if you can refer me to my declaration
7 -- may I refer to this? Then I can say either way
8 yes or no.

9 Q. Yeah. I represent to you that you
10 only quoted the first half, stopped at cropping
11 data as necessary. And you did not quote the
12 second half of this sentence, which starts with,
13 you know, the "or" aspect fit part.

14 MR. HEFAZI: So objection to the form.
15 It misstates the declaration.

16 BY MS. LI:

17 Q. So, if you look at your supplemental
18 declaration. That's I believe in your paragraph
19 128.

20 A. Paragraph 128. Okay.

21 Q. You can take a minute to read this.

22 A. To read it?

23 Q. Yeah. Yeah. Just let me know when
24 you're done.

25 A. Yes.

1 Q. So this paragraph 128 in your
2 supplemental declaration quotes the phrase
3 "cropping data as necessary" from Voss, right?

4 A. I'm on other parts that I have cited.

5 Q. Yeah. But it does not quote the part
6 of the second half of the sentence I was reading,
7 which says: Or aspect fitting -- fully fitting
8 inside the 1:1 area optically, blacking out any
9 unused area with the letter boxing or pillar
10 boxing. Correct?

11 A. Yes. I did not quote that latter
12 half. No.

13 Q. Let's go look at page 11 in Voss.

14 A. Yes.

15 MR. HEFAZI: So I'm just going to
16 object for a moment to the extent that what
17 you read is mischaracterizing kind of
18 the -- there's a mismatch between what
19 you're pointing to in Voss and what you're
20 pointing to in the coded section and what
21 you're kind of saying is omitted.

22 BY MS. LI:

23 Q. So let's look at -- again, going back
24 to page 11, line 5 to line 7.

25 Do you see the word again, "For

1 example"?

2 A. Yes.

3 Q. Okay. It says, "For example, if a
4 user records a video that is 'mostly landscape'
5 with a minority of portrait content, the output
6 format will be a landscape aspect ratio (pillar
7 boxing the portrait segments)."

8 Do you see that?

9 A. Yes.

10 Q. And this sentence also mentions pillar
11 boxing. Yes?

12 A. Yes.

13 Q. And it does not mention cropping. It
14 does not use the word "cropping," right?

15 A. That sentence does not say the word
16 "cropping."

17 Q. And that's not -- that passage I just
18 read, it's not cited or mentioned in your
19 declaration, correct?

20 A. Well, again, as I said -- yeah, you
21 know, what I have cited. But as I have said, it
22 doesn't say pillar boxing is not, you know,
23 changing the field of view. It's just saying that
24 the word cropping does not appear there.

25 Q. All right. Let's go to -- you can

1 take this down. Let's go to Exhibit 1008.

2 (Petitioner's Exhibit 1008 was
3 marked for identification.)

4 BY MS. LI:

5 Q. Which is the prior art Derbanne.
6 Dr. Foroosh, are you familiar with Derbanne?

7 A. Yes.

8 Q. Let's go to Derbanne, column 5, line
9 52. Are you there?

10 A. Yes.

11 Q. Okay. That reads: The position
12 information may characterize positions of the
13 housing 312 based on specific translational and/or
14 rotational positions of the housing 312 and/or
15 based on changes in translational and/or rotational
16 positions of the housing 312 as the functional
17 progress through the capture duration.

18 Do you see that?

19 A. Yes.

20 Q. So Derbanne uses rotational positions
21 of the camera housing to correct images, right?

22 A. But their -- I mean, the answer is
23 yes.

24 But Derbanne is not dealing with
25 horizon leveling at all. Derbanne is talking about

1 -- the correction that Derbanne is talking about
2 is -- is stabilization. It has nothing to do
3 with -- I mean, the two are unrelated. And you're
4 just reading one sentence from Derbanne.

5 Q. Okay. So let's -- let's get back to
6 the stabilization points later.

7 But just focus on the sentence I just
8 read. It mentions using rotational position of the
9 camera housing to correct images, right?

10 A. Well, we cannot do it in isolation.
11 The word "correct images" means something else
12 here. So I cannot just say, yeah, it says correct
13 images.

14 So you get my -- it's not talking
15 about the same thing. Here, corrections that we
16 are talking about is stabilization. And as -- I
17 mean, as an example, well, you know, there could be
18 an intentional rotation that -- you know, that
19 horizon aligning would remove it. But here, it
20 wouldn't be removed because it's stabilizing.

21 So we're not talking about the same
22 correction here.

23 Q. So are you saying that horizon
24 leveling requires removing intentional movements
25 that --

1 MR. HEFAZI: Objection.

2 THE WITNESS: No. No. No. I did not
3 say that. I'm saying is that, that in
4 horizon leveling -- I mean, stretch -- if
5 you want to use the word "intentional."

6 I'm saying that in horizon leveling,
7 you always remove rotations. Whereas, in
8 stabilization, that's not your goal.
9 Stabilization is not compensating for
10 rotations necessarily.

11 It could -- if it's -- you know, if it
12 is, you know, small changes in rotation,
13 then it would encompass it. But not
14 necessarily.

15 In fact, I believe Derbanne goes
16 through length completely, describing that
17 here, you know, with examples that it
18 gives.

19 BY MS. LI:

20 Q. So, you're saying that if there are
21 small changes in rotation, then Derbanne will
22 compensate that, correct?

23 MR. HEFAZI: Objection. Form.

24 THE WITNESS: Not exactly right.

25 I'm saying is that Derbanne is

1 addressing a completely different issue.
2 It has nothing to do with horizon leveling.
3 Horizon leveling is a different problem.
4 That's what I'm saying.

5 And so trying to read just one
6 sentence, that the word "correction"
7 appears, it's not the same correction that
8 '413 patent would be referring to. So
9 these are two different disclosures.

10 Of course, I understand that this is a
11 GoPro patent. So a lot of the claim
12 languages are similar. But the word
13 "correction" is taking out of -- it's taken
14 out of context. If you say that correction
15 here means horizon leveling. No, it
16 doesn't. Correction here is stabilization.

17 BY MS. LI:

18 Q. Does the '832 patent require horizon
19 leveling to be performed for intentional rotation?

20 MR. HEFAZI: Objection. Form.

21 THE WITNESS: I never expressed any
22 opinion on that it has to be intentional or
23 not intentional either way. No, it's not
24 -- that's not what I'm saying.

25 What I'm saying is that Derbanne is

1 dealing with a different problem. Derbanne
2 is dealing with a problem where we are
3 stabilizing the camera images. Whereas,
4 the '413 -- I'm sorry. The '832 patent is
5 talking about horizon leveling. These are
6 two different problems.

7 So, in the context of '832 patent,
8 correction means horizon leveling. In the
9 context of Derbanne, correction means
10 something else. It means stabilization.

11 BY MS. LI:

12 Q. Does Derbanne limit the camera
13 rotational movement to any of the three axes?

14 MR. HEFAZI: Objection. Form.

15 THE WITNESS: Derbanne does not limit,
16 I believe, to any particular axes.

17 But again, the -- that's not the point
18 I'm making. I'm making the point that
19 Derbanne is dealing with a different
20 problem.

21 So, for instance, if Derbanne is
22 talking about an image region and says that
23 we correct that, it's talking about doing
24 something -- I mean, that image region is
25 not the same as, for instance, the viewing

1 window that is disclosed in the '832 patent
2 because they have different purposes. They
3 have different applications, different
4 purposes.

5 One is dealing with stabilization of
6 the region, and the other one is dealing
7 with horizon alignment of the viewing
8 window.

9 (Reporter clarification.)

10 BY MS. LI:

11 Q. Does the '832 patent, in your opinion,
12 require horizon leveling to be performed on
13 deliberate camera rotation?

14 A. I never said that. That's not what
15 I'm saying.

16 I'm saying that -- I'm saying that the
17 '832 patent is dealing with a different problem,
18 horizon leveling. Whether it's deliberate or not
19 doesn't matter. It's dealing with horizon
20 leveling.

21 Whereas, Derbanne is dealing with a
22 different correction problem. It's dealing with a
23 different problem. The problem here that Derbanne
24 is handling is stabilization. These are two
25 different problems.

1 Q. And stabilization in Derbanne
2 compensates both translational and rotational
3 movements, correct?

4 A. That's a very misleading question to
5 my opinion. Because it's not because two -- in two
6 different problems we are compensating translations
7 and rotations. We are doing the same things.

8 I can come up with many different
9 transformation that I can apply to images and
10 compensate for certain degrees of freedom. But
11 they would not be the same operations.

12 So, okay. I mean, Derbanne does
13 translation and rotation. So does HV too. But
14 they're not solving the same problems.

15 Q. I see.

16 So you're saying that even though, you
17 know, they both are involving compensating for
18 translational and rotational information, they just
19 solve different problems?

20 A. Different problems.

21 Q. And Derbanne stabilization takes into
22 account the yaw, pitch and roll information,
23 correct?

24 A. Yes. Derbanne is considering the 3
25 degrees of freedom of rotation measured by its

1 sensor.

2 Q. And Derbanne discloses obtaining
3 rotational positions as the functional progress
4 through the capture duration. That's the exact
5 wording from Derbanne, correct?

6 A. Well, as I said earlier, this patent,
7 you know, was filed and issued to GoPro, obviously.
8 The type of -- you know, some of the languages used
9 here in Derbanne are very similar to the ones used
10 in the '832 patent because the same patent owner is
11 involved here.

12 However, that doesn't take away what I
13 just said earlier. They're referring to two
14 different things. So, for instance, as I repeat --
15 for instance, if Derbanne is talking in an image
16 area that it's being corrected, that -- that is not
17 the same as viewing window that is referred to in
18 the '832 patent.

19 Q. But Derbanne uses the term "viewing
20 window," correct?

21 MR. HEFAZI: So, objection. Form.

22 THE WITNESS: Again, as I said, it's
23 not because -- so like earlier, you said
24 correction. Okay? So -- and it's not
25 because we use the same word, we mean the

1 same thing. It -- it matters in the
2 context.

3 So, regardless of what common words
4 are used between Derbanne and the '832
5 patent, they're in different contexts. So
6 they're referring to two different things.

7 BY MS. LI:

8 Q. But there's no -- I just want to make
9 sure there's no dispute that they actually use
10 quite a lot of common terms.

11 A. Common terms, yes. I agree. There
12 are a lot of common terms between Derbanne and '832
13 patent because it's owned by the same patent owner.

14 Q. Now let's go to Figure 6B in Derbanne.

15 A. Figure -- what was the figure number
16 again?

17 Q. 6B.

18 A. 6B. Okay. I'm there.

19 Q. And you see those, the white
20 rectangles?

21 A. Yes.

22 Q. And those white rectangles are labeled
23 as "capture field of view."

24 Do you see that?

25 A. Yes. I see that, yes.

1 Q. Hold on. Give me a second.

2 And on the right-hand side, you see
3 the capture field of view 624. Do you see that?
4 That is not centered with respect to the Image C
5 620, right?

6 A. In that figure, yes. That is not
7 centered.

8 Q. Okay. You can take this down.

9 Let's go to Exhibit 1005, which is the
10 prior art that says "Pacurariu." Let's go to
11 paragraph 59.

12 (Petitioner's Exhibit 1005 was
13 marked for identification.)

14 BY MS. LI:

15 Q. It reads -- do you see "moreover"?

16 A. Which -- wait. There are no lines --
17 line numbers here.

18 Q. Yeah. I think it's towards the end.

19 A. Towards the end. "Moreover." Yes.

20 Q. Yeah. Good. Okay.

21 It reads, "Moreover, the tilt angle
22 data may be filtered or smoothed using a
23 Savitzky-Golay filter, local regression smoothing,
24 smoothing spline, a Kalman filter, et cetera, on a
25 plurality of the tilt angle data. Various other

1 filters or smoothing algorithms may be used without
2 limitation."

3 Do you see that?

4 A. Yes.

5 Q. Okay. So, in this paragraph,
6 Pacurariu discloses that the tilt angle data can be
7 filtered or smoothed, right?

8 A. It says what it says. Yes.

9 Q. And you didn't cite or mention this
10 paragraph in your declarations, correct?

11 A. I did not offer an opinion on this.
12 No.

13 Q. Okay.

14 MR. HEFAZI: Sorry. Can you remind me
15 what paragraph?

16 MS. LI: 59.

17 MR. HEFAZI: All right.

18 MS. LI: I think we're done.

19 MR. HEFAZI: So if I can just take a
20 couple of moments.

21 MS. LI: Actually, why don't we do
22 this. Why don't we take a five-minute
23 break, and we'll talk and make sure that
24 we're actually done. So...

25 MR. HEFAZI: You just passed the

1 witness. You're saying that you're taking
2 him back?

3 MS. LI: I said we're taking a break.

4 MR. HEFAZI: Well, actually, I don't
5 need to take a break. I just have my
6 questions lined up right now.

7 CROSS-EXAMINATION

8 BY MR. HEFAZI:

9 Q. Okay. So Dr. Foroosh, you're at
10 Exhibit 1005?

11 A. Yes.

12 Q. And I think counsel pointed you to
13 paragraph 59 of Pacurariu?

14 A. Yes.

15 Q. Can you take a look at -- and read out
16 that sentence that begins with "Then, at block
17 720"?

18 A. "Then, at block 720, the image area
19 305 defined by the initial tilt may be selected for
20 all the frames of the video instead of the image
21 area 305 defined by the tilt of each frame."

22 Q. So do you have an understanding one
23 way or another whether Pacurariu discloses changing
24 the size of the image area across a series of
25 frames?

1 A. No. Actually, that's -- that's a good
2 point. Because even in terms of the figures, no.
3 It's -- what Pacurariu does -- my understanding of
4 Pacurariu. What Pacurariu does, it defines at the
5 very beginning of, you know, doing -- applying its
6 methods to the area -- the area that it's working
7 on to the smallest possible, to the minimum size,
8 and apply that throughout all the frames in the
9 sequence. And that line that I read actually is
10 confirming that.

11 Q. Okay. And, Dr. Foroosh, can you go
12 back to Exhibit 1004, which was the Thomason
13 reference.

14 A. Thomason?

15 Q. Yes.

16 A. Yes.

17 Q. I think that's Exhibit 1005. I think
18 it's --

19 A. Oh, this is 1006. Okay. 1004. Thank
20 you.

21 Q. And earlier today, counsel asked you
22 some questions about paragraph 44 -- I'm sorry --
23 41 of this?

24 A. Yes.

25 Q. And, so if you look at paragraph 41, I

1 think counsel asked you about this first sentence
2 where it refers to rotation sensor may be a
3 multiple angle rotation sensor.

4 Do you recall that?

5 A. Yes.

6 Q. And so in this embodiment, do you have
7 an understanding of whether there's any disclosure
8 or discussion of a video?

9 MS. LI: Objection. Leading.

10 THE WITNESS: Well, it says what it
11 says. It says the rotation sensor 14 may
12 be a simple -- I'm sorry -- may be a
13 multiple angle rotation sensor capable of
14 measuring orientation about more than one
15 axis and storing the result in memory 12.

16 There's no mention of video here, so,
17 to answer your question.

18 BY MR. HEFAZI:

19 Q. And there's a mention of panoramic
20 images. Do you see that?

21 A. Yes. At the -- at the end of that
22 paragraph. It says that stored information may
23 then be used, for example, to stitch together a
24 high quality image from several successive -- I'm
25 assuming it's a type -- image -- it says images --

1 to make up a panoramic images using the orientation
2 information to accurately align this -- align and
3 stitch together the different still images.

4 Q. And so, a panoramic image, would that
5 disclose determining viewing windows as a function
6 of progress through a progress length?

7 MS. LI: Objection. Leading.

8 THE WITNESS: No. I -- I've worked a
9 lot in this area, actually personally. You
10 don't have to create any viewing window.
11 You can just stitch together a group of
12 images.

13 First of all, it doesn't mention video
14 again because it's -- actually, it states
15 still images. Not only it doesn't say
16 "video." It says "still images." So those
17 are -- that's clear. It's not video.

18 And the second thing is that, no. I
19 mean, I have worked a lot in this area of
20 panoramic image generation. I'm teaching
21 it.

22 No, you don't define a viewing window.
23 It can be done directly on the original.
24 And typically, that's what is understood.

25 MR. HEFAZI: Okay. Thank you.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

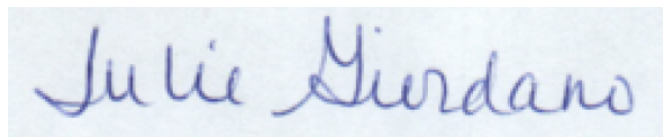
I pass the witness.
MS. LI: Oh, we're done.
MR. HEFAZI: Read.
(The proceedings were concluded at
3:46 p.m.)

CERTIFICATE OF SHORTHAND REPORTER

I, Julie Giordano, Florida
Professional Reporter, do hereby certify that I
was authorized to and did stenographically
report the deposition of DR. HASSAN FOROOSH,
that a review of the transcript was requested;
and that the foregoing transcript, pages 1
through 214 is a true record of my stenographic
notes.

I FURTHER CERTIFY that I am not a
relative, employee, or attorney, or counsel of
any of the parties, nor am I a relative or
employee of any of the parties' attorney or
counsel connected with the action, nor am I
financially interested in the action.

Dated this 6th day of July, 2025.



JULIE GIORDANO

Florida Professional Reporter-Certified

1 NIMA HEFAZI, ESQUIRE

2 nimahefazi@quinnemanuel.com

3 July 7, 2025

4 RE: Arashi Vision (U.S.) LLC v. GoPro, Inc.

5 7/1/2025, Dr. Hassan Foroosh (#7415034)

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 (production-ca@veritext.com).

16 Return completed errata within 30 days from
17 receipt of testimony.

18 If the witness fails to do so within the time
19 allotted, the transcript may be used as if signed.

20
21
22 Yours,

23 Veritext Legal Solutions
24
25

Page 216

1 Arashi Vision (U.S.) LLC v. Gopro, Inc.

2 Dr. Hassan Foroosh (#7415034)

3 E R R A T A S H E E T

4 PAGE_____ LINE_____ CHANGE_____

5 _____

6 REASON_____

7 PAGE_____ LINE_____ CHANGE_____

8 _____

9 REASON_____

10 PAGE_____ LINE_____ CHANGE_____

11 _____

12 REASON_____

13 PAGE_____ LINE_____ CHANGE_____

14 _____

15 REASON_____

16 PAGE_____ LINE_____ CHANGE_____

17 _____

18 REASON_____

19 PAGE_____ LINE_____ CHANGE_____

20 _____

21 REASON_____

22 _____

23 _____

24 Dr. Hassan Foroosh

Date

25

1 Arashi Vision (U.S.) LLC v. Gopro, Inc.

2 Dr. Hassan Foroosh (#7415034)

3 ACKNOWLEDGEMENT OF DEPONENT

4 I, Dr. Hassan Foroosh, 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

Dr. Hassan Foroosh

Date

13

*If notary is required

14

SUBSCRIBED AND SWORN TO BEFORE ME THIS

15

_____ DAY OF _____, 20____.

16

17

18

19

NOTARY PUBLIC

20

21

22

23

24

25

&	10 3:13,14	1006 3:19	123:15,17,20
& 2:5,14	59:18 60:25	144:2,4,9	124:3,4 125:7
0	61:13,13,18	174:11 211:19	125:7 131:12
0 135:2,3	62:21 64:13	1007 3:20	131:15,16,17
0.5 134:25	65:8,11,23	187:23,25	131:24,24
1	66:9 67:23,25	192:22	132:6,13
1 1:15 9:23	72:2,11 73:16	1008 3:23	212:11
42:4,22 43:14	75:24 76:5	199:1,2	144 3:19
43:15 45:22	78:9,12,24	102 174:21	15 55:3 109:17
47:8,9,17	79:7,9,19 80:2	176:4,10 177:8	111:9,10
59:19 60:8	80:8,9,16,18	178:20	113:21 116:3
61:1,15,21	81:7,13 82:3	105 174:16	116:20 117:3
62:5,11,11,21	82:19 83:12,25	106 174:19	16 9:17 10:2,22
64:14 65:9,11	85:25 86:8	107 174:20	132:19 133:5
65:23 66:14,21	87:7,16,18,22	108 174:16	17 16:9,17
67:23,23 68:1	99:2,5 138:21	178:17	193:11,13,14
72:3,11 74:14	138:23 139:19	10:00 1:16	193:17 196:3
74:17 75:24	141:21 178:13	10:58 48:24	18 49:24 50:6
76:6,19,19	178:14 193:10	11 3:16 49:24	53:23 111:11
78:1,10 80:10	193:12 196:3	197:13,24	187 3:20
80:11,18,22,23	100 13:11,15,18	11,336,832 1:9	188 3:21
81:10 88:1,6	1001 3:13	115 3:18	18th 10:7 11:4
88:10 95:11,18	10:16,18 42:5	119 188:19,24	19 17:7,9 52:16
99:7,10 104:17	43:13 49:7	188:25 189:6	55:2 113:21
104:22 106:19	58:2 74:15	11:00 48:12	199 3:23
107:3 109:1	108:22	11:11 48:24	1:09 108:14
112:22 115:15	1002 3:21	12 49:24 55:3	1:1 193:19,21
117:24 123:8	17:25 188:10	117:24 122:22	194:3,25 195:2
123:10,15,22	188:11,20	123:14 124:6	195:14 197:8
130:22,25	1004 3:18	127:1 212:15	2
131:3,8,9,10,12	115:3 123:12	128 196:19,20	2 9:23 112:22
132:7 133:20	211:12,19	197:1	123:12 125:3,5
142:3,3 193:6	1005 3:24	12:24 108:14	130:22,25
215:8	208:9,12	14 117:22	131:3 133:20
	210:10 211:17	122:17 123:9,9	165:16,18

167:22 178:13 178:14 189:10 189:19 191:21 191:23 20 11:23 12:1 59:1 60:17,18 61:5 218:15 2001 3:14 10:23,25 2012 36:24 37:6 2018 36:24 37:6 2021 3:16 11:5 11:7 67:8 2024 9:17 10:2 10:22 172:10 2025 1:15 10:7 11:4 215:17 216:3 208 3:24 21 63:23 196:3 210 3:6 214 215:9 22 109:13 111:9 187:5 191:1 220 190:1,5,10 190:11,13,22 191:1,2,2 22nd 112:8 230 190:10,22 192:2 23rd 112:22	24 43:14 240 190:10,22 191:14 25 56:20 26 146:14 27 135:5,13,18 137:23 140:2 28 99:10,16 29 50:7 56:18 122:16 125:25 126:8 127:11 128:7 131:19 131:23,25 132:14 139:7 2:01 143:20 2:11 143:20 3 3 9:24 10:6 91:11 108:21 108:24 110:13 110:14 112:5 112:22 118:8 118:14 119:13 119:18 120:7 120:18 122:13 125:13 131:6 138:6,8,15,17 139:4,10,11,23 140:17,22,24 141:4 142:8,8 142:23 143:2 143:11 144:11 144:25 145:1,2 145:3 153:18 153:19 154:14	165:18 205:24 30 67:1 175:14 216:16 305 210:19,21 31 148:8,9 312 199:13,14 199:16 32803 1:14 34 99:10,16 138:16 139:5 143:3 34254 215:21 36 99:16 123:2 174:8,13,14 37 18:1 50:7 39 176:6,7 177:6 3:46 1:16 214:5 3a 138:12,18 139:12 141:9 3b 138:9,13,20 139:17 141:19 3d 38:22 47:25 91:12 153:17 160:12 163:2 163:15 4 4 3:4 118:9,14 119:13,18 120:7,18 122:13 131:6 137:23 140:17 140:23,24 165:16,18 167:22 192:22	192:23,25 400 1:13 41 116:15 117:18,19 118:19 119:5 119:20 120:10 121:5 123:19 123:24 125:2 128:16 129:12 131:4,18,19 132:1,2,6 176:7 211:23 211:25 413 122:3 202:8 203:4 44 211:22 440 193:2,4,6 4:3 193:19 194:25 5 5 133:19,21,25 134:3,18 146:13 174:7,9 174:13 180:12 180:14,17 185:12 186:15 186:17 197:24 199:8 50 13:8,9,16 51 52:16,18,19 59:1 60:17,18 61:5 181:5,6 510 58:5,8,9,21 52 181:5,14 183:2 199:9
---	--	---	---

[53 - actually]

53 180:19 181:24 182:3 186:25 187:1 532 58:18 534 58:22,25 54 52:16,18,19 59:2 60:17,18 61:5 59 208:11 209:16 210:13 5c 57:25 58:4 58:24	6b 49:16 207:14,17,18 6c 49:8,17 6th 215:17	108:21 112:22 113:1 114:11 202:18 203:4,7 204:1,11,17 206:10,18 207:4,12 865 2:15	127:19,24 132:10,15 accelerometers 118:1,5 121:17 122:8 124:8 128:23 132:11 accept 40:16 accepts 40:14 accommodates 95:8 account 152:4 205:22 accuracy 133:18,25 134:8,24 135:1 135:3 216:9 accurate 122:23 127:1,4 127:12 129:7 accurately 4:17 124:13 129:3,4 213:2 acknowledge... 218:3 acknowledg... 216:12 action 36:17,18 39:24 40:1,2,5 40:9,19,23 215:15,16 acts 137:25 actual 114:21 123:2 190:9 actually 19:7 39:15 48:14
6	7	9	
6 38:23,23 39:3 118:9,14 119:13,19 120:7,18 122:13 131:6 137:24 140:18 140:23,24 165:19 600 50:2 52:24 53:5 620 208:5 624 208:3 63 112:8 64 144:12,15,20 144:25 145:3,4 145:4 650 14:19 66 53:24 6a 49:8,16 50:2 50:24 51:2,15 52:7 53:5	7 56:23 57:6,21 58:2 74:13,15 74:16 75:6,12 75:16 98:19 125:3,5 133:16 197:24 216:3 7/1/2025 216:5 720 210:17,18 7415034 216:5 217:2 218:2 755 2:6	9 113:19,20 90017 2:16 94304 2:7	
	8	a	
	8 16:8 56:16,23 57:12,13,18,20 98:18,18 135:10,24 140:7 800 1:12 83 67:1,10,11 69:21 832 7:4,10 9:23 10:14 13:5 14:23 15:23 20:1 22:14 42:3,5 45:12 45:18 49:7 52:15 56:16 57:25 59:11 85:18,19	a.m. 1:16 48:24 48:24 aberration 178:19 able 34:16 84:12 85:22 86:19 87:15 116:21 above 1:23 69:22 132:23 216:6 218:7 absolute 190:19 abstract 42:3,4 42:18,20 45:2 45:4,22 47:3 acceleration 127:10,21,25 128:1 accelerometer 118:18 122:24 127:2,4,6,12,16	

[actually - angle]

65:1 98:24 122:14 127:3,8 144:14 149:6 158:7 188:2 189:24 190:8 190:10,17 207:9 209:21 209:24 210:4 211:1,9 213:9 213:14 add 114:19 173:4,11 174:4 175:24 added 178:16 adding 174:25 175:3,10 addition 128:7 174:15 177:6 178:17 additional 136:13,17,24 136:25 137:12 additions 218:6 address 5:9 77:14 120:9,25 121:5 151:13 addressed 112:5 120:6 121:8 134:8 147:20,24 157:8,10,11 166:14 addresses 180:25	addressing 119:15,16 121:11 149:6 150:6 165:24 168:13,20 202:1 adds 174:20 176:3,8 177:6 adjust 47:2 90:5 adjusting 90:10 92:8,9,10 adopted 146:23 advised 7:21 8:7,16 9:12 advocating 130:16,19 affect 96:10,12 151:7 178:10 179:14 affected 178:8 affects 147:22 160:18 affine 146:25 aggelos 3:21 aggressively 158:20 agile 38:5,14,20 39:1 ago 172:9 agree 41:5,9 63:12 82:2 87:9,16,18 110:1,4,9 122:7 154:11	168:4 177:10 185:11 207:11 agreed 14:9 92:25 ahead 34:22 81:6 102:5 121:25 168:1 171:14 179:20 air 39:4 aircraft 38:4,21 38:22,23 39:6 39:9 airplane 39:16 algorithms 209:1 align 124:13 129:3,4 213:2 213:2 aligned 109:11 138:20 139:16 141:18 184:20 aligning 200:19 alignment 38:17 151:16 204:7 allegations 22:9 allotted 216:19 allow 116:6 117:8 allowed 54:22 alternatively 17:22 alto 2:7	amateur 33:20 33:23,25 34:4 34:10,12,15,17 35:7,22 36:1,9 amateurs 33:7 ambiguous 17:4 37:17 69:12,16 77:1 amount 141:5 142:25 143:12 175:11,13,24 175:24 analysis 151:1 162:2 angeles 2:16 angle 38:10 39:10,18,22 40:16,23 41:6 41:11,15 48:3 48:5 91:11 93:5 97:1 117:22 118:17 122:18,21 123:4,20 124:4 125:14,16,17 126:2,18,21,24 126:24,25,25 127:7,9,17,19 128:13,17 129:10,25 137:7 138:21 138:21,23 139:18,18,19 139:23 140:20 140:25 141:21
--	--	---	---

[angle - art]

141:21 142:9 143:4 159:17 159:20,21 160:9,10,24 162:14 163:23 163:23 167:1 169:25 208:21 208:25 209:6 212:3,13 angles 48:1,3 91:11 118:17 125:7 126:4,19 126:20,21 139:18 153:17 154:5 155:17 160:17 163:9 163:17 164:15 164:24 167:1 169:25 174:1 annotated 123:13,14 189:10,18 answer 5:11 6:17 8:25 9:6,7 9:8,10 12:9 13:12 19:21 20:14 23:3,4 24:2 29:15 30:15,17 31:22 32:20 33:15,16 33:22 34:7,16 36:11 43:2,5,9 55:21 61:9 66:4 67:20 81:19 82:15	84:12 85:22 86:12,14,15,20 87:1,4,15 92:21 100:7 102:21 143:8 150:19 151:18 152:5,8 153:13 155:12 156:14 156:17 157:24 158:1,7 159:10 159:11 165:6 166:10 167:14 167:17,18 168:8 169:7,16 170:6,8 171:16 172:12 173:14 199:22 212:17 answered 8:13 8:24 11:18 12:19 19:16 21:23,24 32:3 55:14 84:15 86:21,22 94:17 94:19 102:18 104:9 150:20 158:7 answering 32:7 152:21 apparatus 115:20 131:11 145:5,10 175:17 apparatuses 145:19 146:4	appeal 1:3 appear 57:19 57:23 61:12 70:15,18 96:21 164:9 198:24 appearances 2:1 appeared 195:11 appears 58:15 58:24,24 66:2 68:8 93:14 94:23 109:4 189:25 191:25 202:7 appended 218:7 applicable 216:8 applications 204:3 applied 15:1 21:1,11 23:6 23:15,18 24:18 25:5,5,6,11 26:2,23,24 48:10 65:7 66:8 117:4 144:16 145:13 applies 76:18 112:17,24 113:9,13 apply 18:3 22:2 205:9 211:8	applying 22:13 65:10 67:24,25 68:14,20 113:2 211:5 approaching 48:12 appropriately 178:18 approved 7:23 9:13 april 10:7 11:4 arashi 1:4 216:4 217:1 218:1 area 58:14,16 58:18 77:10 193:21 194:3,4 194:19 195:2 195:14,15 197:8,9 206:16 210:18,21,24 211:6,6 213:9 213:19 areas 183:22 argue 131:23 argumentative 84:20 array 138:4 arrow 58:8 art 16:10,13,14 17:16 35:1,22 36:8,9 45:12 52:1 55:13 69:8 81:17,20 81:21 82:10,10
--	--	--	---

[art - based]

82:13,17,25 83:1,4 84:2,5 86:5,6,8 90:17 90:18,19 97:23 98:3 100:12 103:11 115:7 126:6,12 127:13,18 128:3,5 132:17 141:2 142:13 144:3,8 149:13 150:12,14,17 150:21 151:17 154:22 157:21 160:3,6 161:16 162:5 187:24 188:17 199:5 208:10 art's 35:6 41:25 81:11 136:3 artisan 16:12 arts 34:20 41:22 83:19 aside 164:10 asked 8:12,24 11:17 21:22 32:2 40:14 52:7 82:23 83:3 94:17 101:13 102:17 119:23 122:9 154:14 157:11 211:21 212:1 asking 16:1,2 17:8 24:12	29:10 30:12 32:6,15 33:8 33:23 47:24 82:8 83:6 84:1 84:5 85:3,11 86:2,23 97:20 100:9 102:19 119:3,4 142:20 149:12 150:4 150:10,24 153:12,16 155:8 156:4,21 157:17 158:2 158:11 159:5 159:25 160:7 163:22 169:18 169:19,24 170:19,20 171:9 192:6,10 aspect 68:19 163:22 189:25 191:11 193:20 193:25 194:2 195:1,12,14 196:13 197:7 198:6 aspects 7:21 8:6,8,16 9:12 38:15 96:15 100:17 assume 56:18 assuming 104:21 212:25 attached 216:11	attorney 5:18 20:10 215:12 215:14 216:13 attorneys 20:9 authorized 215:5 automaton 16:15 availability 53:20 available 216:6 avenue 1:12 aware 16:12 19:25 20:3,22 21:6,19 22:1,8 23:13 axes 129:8 153:2,23,23 154:10,13,24 161:2,5 163:5 163:12 164:1 164:12,20 166:4,22 167:5 167:13 168:4 169:1,15 170:8 173:2 203:13 203:16 axis 47:22 109:6,9,22 111:2,15,18,19 111:22 112:1 112:12 117:24 122:20 123:22 124:6 128:18 130:17 146:24	149:9,15 150:3 150:22 151:7,8 151:18 153:7,9 153:11 154:6,6 154:23 155:1,3 155:10,15 159:18,19,19 160:8,24 161:9 161:11 162:7 162:13,24 212:15 ayuan 2:9 b b 1:4 bachelor's 17:17 back 39:24 45:3 49:1,6 60:14 61:13 108:16 129:22 140:2 143:22 169:8 172:6,10 173:14 174:25 175:2 180:22 180:22 192:21 197:23 200:5 210:2 211:12 backward 39:17 ballpark 12:4,6 barrel 175:19 based 15:11,17 15:18 20:8 30:10,18 31:23 32:8 42:15
--	--	---	---

43:25 44:11,16 45:5,19 52:23 62:14 64:8 65:9 69:8 74:21 81:10,20 88:19 89:5 104:24 107:9 113:24 121:18 133:10 141:5 142:24 143:12 156:14 166:16 175:12 190:9 199:13,15 basically 21:12 31:14 38:5,8 104:21 105:11 110:14,15 113:8 153:16 158:24 175:17 194:16,17 basis 31:12 157:2 bear 72:14 beginning 211:5 begins 210:16 believe 6:5 18:22 19:21 24:17 27:21 31:1,16 39:18 49:14 62:19 64:23 69:9 70:12 72:10 74:9 76:2 83:2 100:1 114:21	121:4,7 130:18 131:2,7 147:22 164:15 165:13 165:16 178:7 180:20 194:22 196:18 201:15 203:16 best 11:13 12:24 13:2 41:20 82:22 107:6 better 133:19 133:20,21,21 133:25 134:3 beyond 24:8 25:8 29:17 47:9 104:1 151:1 173:17 173:20 179:2 179:25 180:9 180:10 big 175:20 190:5 bigger 58:21 183:12 185:5 185:17 190:21 binder 10:6 bit 13:15 38:19 64:22 74:4 75:20 84:21 132:9 136:20 blacking 194:4 195:15 197:8 block 210:16 210:18	blocking 194:17 blue 189:15,17 189:18,22,24 190:3,4,8,14,17 190:20,21,25 191:3,10,12,17 191:18,21,23 192:17 board 1:3 62:19 64:6,21 66:7 67:2,12 67:19 68:5,9 68:10,18 69:23 70:2,16 71:7 71:19 72:16,20 72:23 73:7 92:24 94:10 board's 15:2 21:3,14 63:2 63:11,12 64:2 64:3,23 65:7 65:10,25 66:3 68:14 69:5 70:13,19 71:8 71:9,13,18 72:12,15 box 58:18,22 58:25 189:22 189:24 190:3,4 190:8,9,14,17 190:21,22 191:1,3,12,14 191:17,18,21 193:1,5	boxes 189:15 189:18,18 190:20 191:10 191:23 192:17 boxing 194:1,4 194:5,9,20 195:9,16,16,23 195:24 197:9 197:10 198:7 198:11,22 break 48:13,15 48:16,20 108:12,19 143:16 188:3 209:23 210:3,5 breaks 143:25 brief 48:23 108:13 143:19 broad 84:2 160:12 broadened 101:3 broader 78:24 96:6 137:18,18 broadest 162:25
			c
			c 208:4 ca 216:15 california 2:7 2:16 call 6:5 33:3 34:9,9 39:3 46:24

[called - change]

called 4:3 127:25 calling 6:12 calm 158:21 camera 33:4,10 33:14,18,18,23 34:3,4 35:7,22 36:9 39:15 40:2,15,19 41:15 45:24 46:9,14,15,18 47:7 48:9 89:25 90:3,5,7 90:11,23 91:3 91:21 93:12 94:24 100:15 100:16 116:21 122:18 126:3,4 127:17 132:23 133:3 135:7,21 137:23 138:19 138:21 139:15 139:18 140:5 141:17,21 148:25 149:1 151:14 153:1 163:25 164:8 164:19 165:20 166:3,22 167:5 167:12 168:3 169:1,14 170:7 173:1 181:17 181:20 182:11 199:21 200:9 203:3,12	204:13 camera's 164:12 cameras 17:21 17:24 32:24 33:2,6,6,21 34:12 36:17,18 36:19,21,24 37:8,14,21,24 38:4,9,14 39:5 39:8,17,25 40:1,5,9,23 101:15 capable 117:23 123:21 124:5 128:17 212:13 capture 42:9,13 42:13 43:19,20 44:1,3,12,14 52:22 74:22 88:13,20,20,21 89:6,7 99:12 99:19 114:6,7 114:13 137:25 199:17 206:4 207:23 208:3 captured 42:8 99:12,18 138:3 138:9,13 181:11 capturing 96:10 135:9,23 140:7 145:19 146:4	carefully 83:10 158:18 159:7 case 1:23 14:14 20:4,6,16 23:14 26:20 47:11 98:13 114:20,24 131:22 135:9 135:23 140:6 162:16 172:8 cases 78:25 cause 149:9,15 150:22 151:18 caused 150:2 174:20 175:1 176:3,9 177:7 178:19 181:4 caution 5:17 20:9 ccd 137:24 138:4 cell 149:1 center 58:14,16 58:21,25 83:24 90:19 175:11 181:17,18,18 181:21,23 182:3,11,15,16 182:19,20 183:7,8,11,12 183:16,18 184:1,2,4,5,12 184:15,19,20 185:5,9,10,16 185:16 186:7	186:22 187:8 187:19 centered 83:21 193:6,8 208:4 208:7 centers 183:18 central 175:7 certain 29:22 37:25 38:15,15 89:25 163:17 164:24 175:5 176:24 205:10 certainly 112:4 certificate 215:1 certified 215:23 certify 215:4,11 cetera 60:13 62:15 208:24 chance 5:11 change 52:5 59:16 60:22 61:8,19 65:16 66:1,2 67:19 67:22 68:8,11 68:19 69:6,10 70:14,17 74:6 74:7,10 76:24 77:18 78:16 79:5,18,20 80:2,15 81:12 82:2,19 83:1 83:11 85:24 88:8 89:14,20
--	--	--	---

[change - claim]

89:22,23 92:3 92:4,6,10,11,12 92:23 93:1,3,4 93:10,11,14,16 93:18,19,21,22 94:5,15 95:2,3 95:7,14,17 96:2,2,11,17,21 97:2,3,4,7,8,13 97:16 98:8 99:4,6 163:18 177:20 187:15 217:4,7,10,13 217:16,19 changed 42:15 45:5 59:5,13 71:23 87:20 96:15 112:11 177:23 changes 50:19 51:8,14 54:3 54:10,14 55:6 55:7,9 56:2,24 57:1,5,7,9 64:5 65:1 66:19 71:14 72:7,8,8 73:8 75:7,14 75:21,23 78:7 78:25 87:8 91:22 93:25 95:8,15,19 97:9 98:12,12 98:19,25 99:1 112:14 154:4 190:5 199:15	201:12,21 216:10 218:6 changing 64:16 68:1,16 69:2 70:3 71:4 74:1 75:3,19 78:11 79:1,14,17 81:8 83:24 88:3 91:20 92:4,5,6 93:6 96:1,13,16 97:1,5,5,6 98:16 146:19 189:25 198:23 210:23 characterize 199:12 characterizing 43:18 88:12 charge 137:24 cherry 116:17 176:24 choice 160:17 162:20 choose 38:2 circuit 174:16 174:19,19 178:17 cite 27:17,20 29:24 30:3 53:8 112:2 113:15 131:8 172:25 177:25 178:1 209:9	cited 7:2 19:14 27:9 29:8,8 30:11,25 31:21 32:9,17,21 53:18 112:5 117:14 134:5 171:2 177:11 177:13,14,17 197:4 198:18 198:21 citing 26:14 27:2,5,12,16,23 28:7,17,21 113:17 119:7 120:13 civility 85:6 claim 14:22 15:22 16:4,21 17:2 20:23 21:1,7,20 22:2 22:12,13 23:9 23:11,23 24:15 24:20,24,25 25:15 42:22 43:12,14,15 45:22 47:10,17 51:9,10 56:16 56:23,23 57:6 57:12,12,18,20 57:21 59:17,18 59:19 60:4,7,8 60:25,25 61:1 61:13,13,15,18 61:21 62:5,10 62:11,21,21	64:13,14 65:8 65:9,11,11,23 65:23 66:9,14 66:21 67:23,23 67:23,25 68:1 68:13,13 69:1 72:1,2,2,3 73:12,16,16 74:13,14,15,16 74:17 75:5,12 75:15,24 76:5 76:6,19,19 78:1,9,10,11,17 78:23,24 79:6 79:7,7,9,19 80:2,7,9,10,11 80:16,18,18,22 80:23,25 81:7 81:10,12 82:3 82:19 83:12,25 85:24 86:8 87:7,16,18,22 88:1,6,10 90:1 90:9 91:17 92:1,12 93:3,7 93:23 95:11,18 96:3,3,5,21 98:17,18,18 99:2,4,7,10 100:14 104:17 104:17,22 106:19 107:3 108:21 109:1 110:13,13,14 112:5 122:3
---	--	--	--

[claim - confirms]

124:24,24 202:11 claimed 120:23 claims 43:12 57:20 68:21 70:9 72:11 73:18 77:17 114:21 120:5 120:24 123:6 128:11 165:18 clarification 7:6 20:24 22:21 35:3 49:9 54:5 63:19 116:25 143:6 161:4 181:8 194:12 204:9 clean 10:11 clear 18:6 29:1 58:17 70:8 75:16 106:15 125:25 140:19 179:8 213:17 clearly 68:14 76:20 89:8 139:4 142:9 client 5:18 20:10 clouds 192:18 coaching 157:9 coded 197:20 collection 142:4,18	column 49:24 50:6,7 52:16 53:23 55:2 56:18 59:1 60:17,18 61:5 99:10,16 108:24 109:13 111:9 112:7,22 113:18,20 144:11 145:1,2 145:3 146:13 174:7,9,13 178:13,14 199:8 combin 168:10 combination 118:10 119:11 119:12,24 120:3,16,17,23 121:9,12,13 122:1,5 124:18 124:25 128:10 129:22,25 130:15,16,18 139:7 141:3 168:22 170:15 172:4 185:20 combinations 57:13 118:15 118:24 119:9 119:16 120:4 120:17 121:15 122:10,11 123:5 128:11 128:12 130:20	130:22 134:8 134:10 147:24 147:25 149:21 165:15 166:7,8 166:15,16,17 167:20,21 168:11 169:22 170:16 171:22 come 177:5 205:8 comes 91:21 92:2 comfortable 9:8 coming 72:1 169:8 172:12 175:5 176:25 common 207:3 207:10,11,12 communicati... 5:19,20 20:8 20:11 commute 163:19 commuted 163:19 compared 191:22 compensate 42:12 47:7 114:5,12 201:22 205:10 compensates 47:15 205:2	compensating 201:9 205:6,17 complete 39:3 70:15 218:8 completed 216:16 completely 31:9 71:6 72:11 164:7 169:7 201:16 202:1 components 146:18,23,25 147:7,11,12,14 148:6,10,16 comprises 142:1,6 computer 17:18 132:25 computers 145:20 concept 110:24 137:3 concerned 150:7,8 165:8 concluded 214:4 configuration 146:22 confirmed 62:19 124:15 confirming 142:21 211:10 confirms 124:15 127:9
--	---	--	---

[confirms - conversion]

139:6 confused 46:12 113:4 connected 215:15 connects 106:20 107:3 consider 15:21 16:3 23:23 26:15 28:4,6 28:11,18,24 29:6 56:9 118:19 119:5 119:19 128:5 166:2,9 considered 16:20,25 31:8 31:8 119:18 considering 38:18 205:24 consistent 9:6 72:11 consistently 25:11 constant 55:5 construction 15:2 21:1,11 23:11,15,23 24:15,20,25 25:16 26:21 63:2,11,13 64:2,4,24 65:7 65:10,25 66:3 66:9 67:18,24 67:25 68:5,8	68:14,21 69:5 69:9 70:8,13 71:13 72:15 157:5,16,18 161:22 162:13 179:21 180:3 constructions 20:23 21:7,20 22:3,12,14 23:9 24:24 156:24 159:23 construed 67:2 67:13 69:23 72:16,20 73:7 94:10 contacted 14:9 contemplating 139:25 148:22 content 43:24 44:4,9,16,18,19 44:21,23,25 50:20 52:21 57:1,10 59:8 59:21,23,25 60:1,11 61:24 62:2,3,13 63:4 66:11 72:17 76:9,12,14,15 78:3 80:20,21 88:17,24 89:3 99:11,11,17,18 99:24 100:3,10 100:13,18,18 101:1,6,7,12,18 101:21,22	102:9,10 103:4 103:16,19,24 103:25 104:7 104:14,15,24 104:25 105:2,4 105:6,7,12,14 105:17,19,21 105:21 106:1,8 106:9,20,22 107:3,5,9,10,11 107:14,16,17 107:19,23 108:1,1,6,8 109:2,4,5,7 112:13 113:24 114:1 198:5 contents 88:23 contest 14:2 context 42:2 45:16,17,18 54:25 56:9 57:16 86:11 97:19 100:13 103:22 104:4 117:2,10 121:19,23 122:9,10,11 124:17,20 126:15 127:16 128:6,20 129:6 129:10 130:10 132:3,3 136:12 137:1 152:2,18 160:3,6 162:1 167:21 177:1,2	186:20 194:10 194:14 202:14 203:7,9 207:2 contexts 207:5 continue 29:17 54:16 116:16 121:21 123:1 137:20 145:16 158:1 159:14 175:16 continued 146:22 continues 54:17 116:20 128:21 158:4 187:5 continuous 93:19 contract 14:15 contradicting 46:7 contradictory 46:8 convention 48:2 154:4 161:15,16 163:13 conventional 16:13 conventions 154:7 158:11 160:2,16 conversion 147:2
---	---	---	--

[coordinate - cropped]

coordinate 160:18 161:17 161:18,19 162:21 163:14 163:16,17	77:18 78:17 80:16 81:13 82:4,20 83:12 85:18 86:20 90:6 94:22 98:25 106:9	200:11,12 201:22 203:23 205:3,23 206:5 206:20 209:10 218:8	corrects 147:9 corresponding 122:20 142:25 165:15 counsel 2:10,18 5:25 49:3 69:13 77:2 84:23 106:12 108:19 143:25 156:12 158:19 210:12 211:21 212:1 215:12 215:15 216:14
coordinates 76:17	107:5 112:25 113:10 115:21 116:12 117:9 118:5,20 119:20 120:10 121:6 122:8 123:16,18,22 128:18 131:13 131:16 132:7 132:17,18 133:4,7,11 134:1,6 135:2 137:13 138:9 140:9,13 141:6 142:2,15 143:1 143:13,14 145:24 147:14 148:6 149:10 153:3 164:20 166:4 170:21 175:1 176:4,20 177:11 183:12 184:16 185:6 185:17 187:17 187:18,20 192:24 193:7,8 194:21 196:4 197:10 198:19 199:21 200:9	corrected 146:24 147:1 174:18 175:11 175:25 206:16 correcting 147:13 148:5 149:3 correction 115:12 116:6 117:9 143:5 144:18 145:14 145:24 146:10 146:17,17 147:6,8,9 148:13,15,17 148:18,19,24 165:11,12 174:18,19 175:8,10,11,22 175:23 177:4 180:25 181:1 200:1,22 202:6 202:7,13,14,16 203:8,9 204:22 206:24 corrections 116:7 200:15 218:6 correctly 118:2 118:3	corrects 147:9 corresponding 122:20 142:25 165:15 counsel 2:10,18 5:25 49:3 69:13 77:2 84:23 106:12 108:19 143:25 156:12 158:19 210:12 211:21 212:1 215:12 215:15 216:14 couple 4:25 6:8 209:20 coupled 137:24 course 7:20 12:14 30:19 42:22 54:17 145:19 183:21 202:10 cover 192:17 create 109:20 111:14 213:10 creativity 16:14 crop 181:19,19 183:5 195:9 cropped 181:22 182:2,12,15,20 183:7,11,20 184:20 185:5 185:16 186:21 187:7
copies 216:14 copy 17:10 115:6 correct 7:5,15 7:16 8:11 9:17 9:19 10:2,7,8 10:17,23,24 11:5,6 14:24 14:25 21:8,21 25:17 26:10,18 27:3,6,11,19,22 28:2 30:4 31:21 35:23 36:24 37:3 39:6 40:24 41:7,12 45:13 46:11,17,19 47:7 49:13,17 50:24 51:8,15 52:9,11 53:10 56:3,19 57:20 58:3,10,11,19 59:13,16 60:23 61:8,11 63:6,9 65:2 66:1 67:19 68:9 69:10 71:15 73:9 76:24			

[cropping - declarations]

cropping	d	204:17,19,21	119:14 134:13
146:19 183:4,6	d 1:4 3:1	204:22	147:21 151:2,5
183:15 184:4	data 135:10,24	decision 63:18	152:24 154:20
193:21 194:21	136:4,6,6,7,7,9	63:21 70:19	155:13,25
194:23 195:2,4	136:15,16,22	71:8,9 72:12	156:1,11 166:2
195:6,11,19,21	136:22 137:4,6	declaration	167:25 169:11
195:22,24	137:11,13,19	3:14,16,21 7:1	170:3,4 171:2
196:10 197:3	137:25 138:2	8:11 9:16,24	171:3,17
198:13,14,16	140:7 193:22	9:25 10:2,3,5	173:16,18,20
198:24	195:2,6 196:11	10:21 11:3,11	173:21,24
cross 3:6 210:7	197:3 208:22	11:21 12:13,15	174:4 177:18
current 83:6,9	208:25 209:6	12:21,23 13:3	180:4 186:19
curve 50:2,18	date 1:15 9:19	15:1,3,24 16:7	186:20 187:1,2
50:24 51:2	15:11 34:24	16:18 17:9,11	187:3,11,13
52:9,10,24,24	35:2 55:18	17:12,14 18:2	188:13,20
53:4 56:3	65:12 127:5,23	18:11,22,24	196:6,15,18
curved 109:4	217:24 218:12	19:8,10,15,18	197:2 198:19
curves 49:13	dated 9:16 10:2	19:22 23:7,19	declarations
109:21 111:14	10:6,21 11:4	24:5,6,7 25:13	6:22,24 7:3,8
customarily	215:17	25:23 27:3	7:14,17 8:1,21
15:12,14,19	dates 36:25	28:16 31:11,21	13:21 14:4,8
customary	datum 136:7	32:9,12,13,21	16:2,6 20:17
14:24 15:8,22	day 14:10	34:1,6 35:10	22:4 23:5 25:4
16:3,21 17:1	15:20 130:13	35:18 36:6	25:5,7,12,17,25
21:3,13 22:6	215:17 218:15	37:1,3 49:19	26:1,6,9,13,24
23:6,16,20	days 216:16	49:21,21 52:4	27:6,9,10,13,18
24:8,19 25:6	dc 127:7,25	53:15,18 55:22	27:21,25 28:2
25:11 26:2,25	deal 83:20	55:23 56:5,14	28:11,24 29:5
35:12 45:20	dealing 62:22	57:15 63:8	29:20,23 30:3
46:25 100:19	100:15 101:15	67:1 69:21	31:1,24 32:18
136:5 178:25	140:1 148:25	70:16 81:22	37:5 40:21
179:24 180:2,6	151:14 164:6,7	83:16,23 86:10	53:9 56:8,12
cut 29:13 171:6	165:20,21	86:17 87:5,13	101:12 102:24
	199:24 203:1,2	100:2 112:3	119:4,6 120:10
	203:19 204:5,6	113:16 116:12	121:5 131:8

[declarations - determined]

134:6 148:12 152:20 155:7 156:10 172:25 176:20 177:11 178:1 196:4 209:10 declare 218:4 declared 23:18 decrease 50:10 50:14 deemed 218:6 define 33:15,22 89:11 158:12 158:24 213:22 defined 44:19 44:21 105:2,4 105:12,22 107:12,16 108:2 210:19 210:21 defines 33:18 78:2 105:13,24 105:25 107:13 107:22 108:3,4 108:5 126:1 211:4 defining 44:4 70:24 88:22 161:20 definitely 40:20 122:4 124:24 172:10 definition 18:3 33:9 34:17,25 65:20 157:5	159:3,5 160:22 160:24 161:23 162:3,13 163:23 definitions 156:23 degree 17:17 47:8,9 133:19 133:20,21,21 133:25 134:18 135:2,4 160:11 163:1 178:15 degrees 38:23 38:24 39:3 91:12 134:3,25 138:22,23 139:19 141:21 153:19,19 154:14 156:8 164:4 165:23 167:23 171:25 205:10,25 deliberate 204:13,18 depend 98:6 152:6 dependent 66:19 98:10,12 depending 48:1 depends 40:12 64:17,18 65:19 72:3,7,8 89:24 97:3,10 98:4,9 103:22 104:4 106:2,2 136:11	152:18 160:15 161:14,18 162:19,20,21 163:12 depicted 42:16 42:19 45:7,8 109:3,6 112:13 depiction 191:5 deponent 216:13 218:3 deposed 4:19 deposing 216:13 deposition 1:18 1:23 5:16 6:4 6:10,21 85:12 143:25 215:6 derbanne 3:23 199:5,6,8,20,24 199:25 200:1,4 201:15,21,25 202:25 203:1,9 203:12,15,19 203:21 204:21 204:23 205:1 205:12,21,24 206:2,5,9,15,19 207:4,12,14 describe 153:17,22 described 110:15,19 120:19 145:12 154:25 193:4,5	describes 51:1 51:13 52:20 59:11 112:23 113:8 132:6 143:3,4 describing 50:23 123:5 143:2,11 201:16 description 125:19 131:16 139:5,22 design 40:13 desired 112:11 112:15,17,24 113:9,13 details 163:21 determination 44:6,7 59:19 59:21 60:9,11 61:2,22,24 62:6,20 63:23 66:12 71:10 74:14,18,19 76:7,9 89:1,2 determine 43:23 62:12 64:11 70:25 71:5 83:20 determined 54:3,10,13 64:10 70:4,6 70:25 71:1 94:11 178:18
--	---	--	--

[determining - displaying]

determining 59:25 62:2,7 63:3,5 64:24 67:2,3,13,14 68:6 69:23,25 71:19 72:17,24 73:23 76:14 80:21 88:17 213:5 deviation 134:19 device 42:9,13 43:19 44:2,12 52:23 74:22 88:13,20 89:6 96:10 114:6,13 132:24 133:7 133:10,13 137:24 144:17 144:18 145:13 146:3 189:23 190:5 devices 145:18 146:10 difference 141:13 differences 154:9 192:14 different 26:21 40:1,9 42:15 45:6 59:16 60:23 61:8,19 63:6 64:5,10 64:11,21,25 65:2,2 67:4,15	68:7 69:25 70:22 71:5,14 71:20 72:24 73:8 74:6 75:4 90:20 92:25 94:12 99:12,18 110:19 124:14 129:5 131:20 148:23,24 153:2 154:3,10 160:16,16,17 160:25 161:2 162:22 163:6 164:6,7 169:7 169:8 175:11 175:24 183:18 183:22 191:10 192:18 202:1,3 202:9 203:1,6 203:19 204:2,3 204:3,17,22,23 204:25 205:6,8 205:19,20 206:14 207:5,6 213:3 digital 17:21,24 dimension 193:19 194:24 direct 3:4 4:6 112:14 direction 122:19 126:1 127:8 128:14 165:4	directions 153:2 163:6 directly 213:23 disagree 70:4 71:6 78:20 87:9,16,18 93:17 95:3 97:15 110:7,9 166:11 168:4 disclose 86:7 149:11,12,19 213:5 disclosed 14:4 47:16 141:2 148:20 151:5 166:5 171:25 176:3,22 185:10 204:1 discloses 51:7 53:6 110:5 115:17,23 117:7 118:4 121:16 122:7 128:16 133:3 133:24 134:16 142:23 145:23 146:9 147:5,13 148:5 150:11 174:25 175:12 176:17 181:16 206:2 209:6 210:23 disclosing 90:18 113:2 116:1 125:12	142:8 147:8 165:9 175:17 182:7,10 183:1 184:3,6,7,11,19 184:21 185:1 186:2,10 disclosure 119:20 131:4 133:14 140:19 140:21,25 164:18 167:3 173:10 183:10 184:14 185:3,6 185:8,15 212:7 disclosures 45:21 118:8 131:20 147:21 149:5 172:17 177:25 202:9 disclude 90:2 discuss 19:11 28:16 56:15 103:1 108:18 143:24 154:18 156:5 170:5 177:21 discussed 49:3 69:22 137:7 discussing 149:7 discussion 153:4 212:8 displaying 105:15,16,18
--	---	--	--

[dispute - encompasses]

dispute 128:15 132:5 176:17 207:9 disputing 134:13 distorted 41:6 41:12 distortion 109:2,5,23 111:2,16,18,21 111:25 112:10 112:12,15,15 112:17,18,24 112:24 113:2,3 113:9,9,13,14 147:1 174:15 174:17,18,20 175:1,3,7,8,9 175:10,13,15 175:19,20,25 176:3,9 177:6 177:7 178:16 178:17,19 181:7,10,13 183:2 distortions 41:16 109:20 111:13 181:3,4 doctor 143:22 document 6:19 28:7 30:8 66:6 71:8 documentatio... 16:24	documents 6:9 6:15,20 7:22 7:23 8:15 9:22 27:8,18,20,25 28:6 30:14 32:8 doing 90:4,9 92:7 106:13 107:6 114:12 150:1 165:9 203:23 205:7 211:5 dr 1:18 3:3,15 3:17,21 4:2,8 5:15 8:19 10:14 11:10 14:21 17:14 18:3 19:20 21:17 29:14 32:15,23 35:5 43:10 48:21 49:7 87:3,6,12 92:20 108:16 115:6 118:6,7 118:11,13,23 118:25 119:4 119:10,25 120:14 121:10 122:5,12 125:1 130:15,19 131:3,5,8 134:9 139:8 140:16 141:3 144:7 156:2,11 166:6,19	167:20 168:2,6 168:10,18 170:17 172:17 173:22 185:21 186:3,11 188:4 188:14,16,21 199:6 210:9 211:11 215:6 216:5 217:2,24 218:2,4,12 drafted 7:17,22 drive 145:21 drones 145:22 duly 4:3 duration 43:21 44:3,14 74:24 88:15,22 89:7 99:13,19 114:7 199:17 206:4	effectuates 44:24 105:6 107:18 efficiently 85:13 eight 4:21 6:7 either 13:13 68:11 77:24 78:22 103:19 135:8,22 140:5 164:21,22 166:24 169:19 177:12 183:25 191:6 193:20 195:1 196:7 202:23 electronic 144:17,18 145:13,18 146:3,10 eliminate 183:3 emanuel 2:14 embodiment 145:6,11 186:15,17 212:6 embodiments 119:17 employee 215:12,14 encompass 91:15 93:8 201:13 encompasses 90:25 91:7,14
		e	
		e 3:1 217:3,3,3 e.g. 50:18 55:6 112:13 earlier 45:2 55:15 127:16 139:6 152:25 161:9 164:3 183:23 191:9 194:22 206:6 206:13,23 211:21 easier 63:8 effect 174:20 175:1 176:3,9 177:7 178:16	

[encompasses - expressing]

91:17 95:11 engineering 17:18 entire 182:21 entirely 9:11 entirety 7:9 equal 179:3,9 179:10,15 equipment 115:13,20 equivalent 17:19 errata 216:11 216:13,16 esquire 2:3,4 2:13 216:1 essentially 153:21 estimate 11:13 12:24 et 60:12 62:15 208:24 evidence 16:20 16:22 18:9,18 19:3,7,14,18,20 29:4 30:2,25 31:13,15,19,23 31:25 32:16,20 167:9 172:25 173:7,10 exact 17:10 71:8 206:4 exactly 66:6 134:22 181:17 201:24	examination 3:4,6 4:6 210:7 examined 4:4 example 33:7 36:20 49:12 50:1,2,24 51:1 51:5,15 52:6 58:23 114:25 116:7 124:9 128:25 129:14 129:18 130:10 132:24 185:12 193:16,17 194:24 198:1,3 200:17 212:23 examples 40:7 52:13 94:20 129:21 201:17 exceed 179:1 180:5,9 exceeding 178:18,24 179:17,17,18 179:22,24 180:3 except 15:1 21:14 90:9 excludes 131:3 excuse 44:23 112:20 179:7 exercising 60:8 exhibit 3:11,13 3:14,16,18,19 3:20,21,23,24 10:12,16,18,23	10:25 11:5,7 17:25 28:18 42:5 43:13 49:7 58:2 67:8 74:15 86:4 97:23 108:22 109:14 115:2,3 123:12 144:2,4 144:9 174:9,11 187:22,23,25 188:10,11,20 192:22 199:1,2 208:9,12 210:10 211:12 211:17 exhibits 3:10 7:2 26:14 27:2 27:5,15,16 29:8,18,18,24 30:11,20 31:14 31:16,21 32:8 existence 109:19 111:2 111:13,21,25 112:23 existing 112:15 112:16 113:8 113:13 expand 184:24 experience 17:20,22 32:23 33:1 36:16 expert 25:2 84:11 85:17,19 134:10	expertise 31:12 explain 38:19 express 7:11 14:3 18:10 25:24 28:8 33:10 35:9,13 49:18 55:16,18 55:22 56:4,5 56:10,11 83:22 86:24 102:13 102:22 166:25 167:1 expressed 18:16,25 19:5 19:22 20:17 23:4 25:3,24 26:5 28:20 29:9,19,22 30:10 31:10 34:6 36:12,13 40:20 41:2 47:3 49:14 52:3 57:12 68:11,18 86:4 86:16 87:5 96:24 97:19,24 100:2,8 101:11 101:14 102:25 103:9 104:11 162:19 166:7 179:13,16 192:13 202:21 expressing 19:10 35:18 36:1 55:24
---	--	--	---

[extending - fitting]

extending 26:16 extent 9:5 20:7 20:12 22:18 25:19 53:20 63:16 107:14 117:13 168:6 169:3 197:16 extents 44:4,18 44:21 88:22 105:1,3,12,13 105:23,25 107:11,15,23 108:4,5 extrinsic 19:19 eye 191:24 192:8	far 13:5 162:24 fashion 39:2 features 38:1,6 38:16 105:24 107:22 feel 22:11,24 26:20 feeling 26:22 feelings 23:4 feels 9:8 field 17:19 44:9 59:20,23,24 60:10,12 61:23 61:25 62:2 66:10 76:8,11 76:13 80:20 89:3 113:25 198:23 207:23 208:3 figueroa 2:15 figure 49:8 50:2,24 51:2 51:15 52:7 53:5 57:25 58:4,24 118:8 118:9,14 119:13,18 120:7,18,18 122:13,13 123:8,10,14,15 125:3,3,5,5,13 131:6,8,9,10,12 132:6 138:6,8 138:9,12,15,17 138:18,20	139:4,10,11,12 139:17,23,25 140:17,21,22 140:23,24 141:4,9,19 142:8,8,23 143:2,11 180:12,14,17 180:20 181:5,5 181:6,12,14,24 183:2 184:7 185:12,21,24 186:15,17 189:10,11,19 191:21,23 192:15,15,16 192:22,23,25 193:6 207:14 207:15,15 208:6 figures 49:12 49:15,16,22 120:20 123:1 131:6 140:17 186:14 211:2 file 101:6 102:3 102:11 103:4,7 103:8,16,16,20 103:20 104:3,7 104:12,12 filed 1:23 206:7 filled 193:20 195:1 filling 193:21 195:2	filter 208:23,24 filtered 208:22 209:7 filters 209:1 financially 215:16 find 28:1 30:3 158:3 fine 48:19 165:2 finish 29:14 43:2,4,9 81:5 82:12 84:16 85:12,14 91:16 92:20 102:4 151:10 finished 85:5 first 4:3 12:12 12:15 38:13 39:14 62:5 67:12 89:8 124:17,19 129:21 142:5 175:22 181:3 187:6 190:12 190:15 196:10 212:1 213:13 fisheye 175:18 175:18 181:5,6 181:9,10 fit 193:25 194:2 195:14 196:13 fitting 194:3 195:14 197:7,7
f			
face 5:22,22 6:7 6:7 fact 92:2 93:19 110:12 142:5 151:12 201:15 factor 100:23 factors 152:6 fails 216:18 fair 47:1 149:16 163:4 164:12 familiar 4:22 115:7 144:7 153:6,8,10 170:21 180:17 188:16 199:6			

[five - fully]

five 143:17 209:22	16:25 18:19 20:2 21:9,23	184:17 185:18 192:4 196:14	frame 62:20,20 71:10,10 73:23
fix 160:20	22:17 23:12	201:23 202:20	93:19,19 96:14
fixed 62:7 64:10	24:1 25:19 26:11 28:12,25	203:14 206:21	96:14 141:5,6 141:12,12,14
flat 14:19	30:5 31:4 35:8	format 198:6	141:14,20,24 141:25 210:21
florida 1:14,20 1:22 215:3,23	36:10 39:12 40:25 41:13	formed 30:17 31:11,22 32:8	frames 59:16 60:23 61:8,19
flown 38:22 39:2	45:14 51:16 53:11 65:3	86:16 166:16	64:5 65:2 135:10,24
fly 56:11 100:9 102:20,23	69:15,18,19 71:16 73:10	forming 15:21 16:3,20 23:17	139:14 140:8 140:12 142:2
150:25 151:24 162:1 174:5	75:25 76:25 77:6,19 78:19	23:24 118:20 119:5,14	142:14 210:20 210:25 211:8
focus 95:14 174:24 176:1	79:21 80:4 81:14 82:5,21	120:15 166:1 182:9	framing 59:25 62:3 76:14
189:17 195:5 195:13 200:7	83:13 86:1 87:10,21 91:5	foroosh 1:18 3:3,15,17 4:2,8	78:3 80:21 freedom 38:23
focused 118:14 140:5	94:6 96:18 99:25 100:6	4:12 5:15 8:19 10:14 11:10	38:24 39:4 47:8,9 91:12
focusing 128:8 128:9	101:9 102:12 103:5,17 104:8	14:21 19:20 21:17 29:14	153:19,20 154:14 156:8
foerster 2:5	104:19 106:10 106:13 110:2	32:15,23 35:5 43:10 48:21	160:11 163:1 164:4 165:24
follow 43:3 50:5,11,15	104:19 106:10 111:4 117:13	49:7 92:20 108:16 115:6	167:23 171:25 205:10,25
114:2,9	118:21 119:21 120:11 123:23	144:7 188:16 199:6 210:9	friday 6:5 front 63:18,21
following 106:4	137:2,14 145:25 147:15	211:11 215:6 216:5 217:2,24	70:19 144:8 frustrating
follows 4:4 52:21,22	149:17 162:8 165:5,14	218:2,4,12 forth 18:2 70:7	84:19 full 91:22 196:1
force 183:17	166:12 169:2 173:5,12 178:3	forward 39:17 152:8	fully 193:21 194:3 195:2,14
foregoing 215:8 218:5	178:8 179:11 182:4 183:13	found 6:21 four 17:22	
forgot 130:21			
form 7:18 8:2 9:9 13:22,25			

[fully - going]

197:7 function 43:20 43:24 44:2,10 44:13 46:16 54:22 57:8 59:6 62:5,13 62:16,18,24 63:4 64:14,16 65:13,19,20,21 66:15,18,22,23 68:2,15,16,22 68:25 69:2 70:10 72:4,6 72:18,21 73:6 73:14,22,24,25 74:20,23 75:1 75:18 76:20 78:3,5,13 79:10,15,16 80:6,12,23 81:2,3,9 87:24 88:14,18,21,24 89:4,6,11,16,20 89:21 90:4,10 90:21 91:19 92:1 93:25 94:7,9 95:22 95:25 96:7 97:11,17 98:2 98:11,15,20 213:5 functional 56:25 199:16 206:3	functionality 90:8 further 31:19 31:25 32:10 74:19 132:24 133:20 215:11 future 93:22 97:9 g game 145:21 general 6:18 33:8,23 37:14 40:6 41:14 47:24 48:7 81:16 86:13,14 86:23,24,25 87:1 92:1 97:21 132:9 163:1 generality 90:15 generate 44:15 104:23 107:8 107:24 129:9 generated 42:10 52:23 generating 117:4,10 121:23 122:2 125:9 generation 213:20 getting 81:16 giordano 1:20 215:3,22	give 12:5,8,25 35:12 94:19 100:9 102:21 130:11 152:4,7 159:2,22 160:2 160:5,19,20,22 161:15,22 162:4 167:8,15 188:7 208:1 given 14:23 114:25 218:9 gives 131:15 183:2 201:18 giving 156:7 165:1 glad 14:5 19:11 36:4 56:15 82:14 83:17 103:1 154:18 170:5 171:19 177:21 glasses 42:7 go 10:15 19:23 34:22 35:18 36:4 39:24 41:20 42:24 49:6 53:23 57:25 59:1 60:14 66:14 70:25 81:6 100:21 102:5 108:21 109:13 113:18 115:15 116:14 120:23 121:25 130:5	138:14 140:2 141:1 154:12 156:4 162:24 168:1 171:14 172:19 173:14 178:13 179:20 180:9,10,12,22 180:22 184:25 188:5 192:21 197:13 198:25 199:1,8 207:14 208:9,10 211:11 goal 201:8 goes 42:22 43:22 47:9 193:25 194:2 201:15 going 22:16 29:16 31:3 42:2 43:13 56:10 63:15 84:8,12 102:22 104:1 117:12 129:22 154:12 158:4,12 162:10 172:6 173:13,17 174:4 179:1,25 181:19,20 182:15 183:4,5 183:16,22 184:19 190:7 197:15,23
--	--	--	--

[golay - high]

golay 208:23	guess 13:2 17:7	7:18 8:2,12,23	117:12,19
good 4:8,9	18:5 124:11	9:4 10:10	118:21 119:21
47:23 48:12	guessing 17:5	11:17,24 12:7	120:11 123:23
208:20 211:1	h	13:22,25 17:3	130:23 135:16
gopro 1:7	h 217:3	18:19 20:2,7	137:2,14
14:12 25:20	half 6:6 195:7	21:9,22 22:16	143:15,18
36:19,21,24	195:18 196:10	22:22 23:12	145:25 147:15
37:8,14,20,24	196:12 197:6	24:1 25:18	149:17 156:18
38:9,18 40:4	197:12	26:11 28:12,25	156:23 157:8
40:15,22,22	hand 58:20	29:12 30:5	157:10,24
202:11 206:7	147:19 191:11	31:3 32:2 35:8	158:19 162:8
216:4 217:1	191:12 208:2	36:10 37:16	165:5 166:11
218:1	handheld 133:6	39:12 40:25	168:5 169:2
gopro's 20:22	133:10 149:1	41:13 42:25	171:5 173:5,12
21:6,20 22:8	handle 38:14	43:4 45:14	176:6 178:3
22:11,19 23:8	handling	48:11,17 51:16	179:11 182:4
23:23 24:14,24	204:24	53:11,19 63:15	183:13 184:17
25:15	happen 93:21	63:20 65:3	185:18 188:4
gradual 55:8	happening	69:11,15,19	192:4 196:14
gravitational	195:22	71:16 73:10	197:15 201:1
127:10,21	happens 92:6	75:25 76:25	201:23 202:20
128:2	92:12,23 93:1	77:4,19 78:18	203:14 206:21
gray 58:16	happy 34:7	79:21 80:4	209:14,17,19
grayed 58:14	hassan 1:18 3:3	81:14 82:5,21	209:25 210:4,8
58:18	3:15,17 4:2,12	83:13 84:14,18	212:18 213:25
great 5:8	215:6 216:5	84:24 85:6	214:3 216:1
greater 180:10	217:2,24 218:2	86:1 87:10,21	help 47:19
ground 167:21	218:4,12	91:5 92:15,18	154:8
167:22	head 4:21 13:7	94:6,16 96:18	helpful 39:9
grounds 130:23	13:19 37:1	99:25 100:6,21	hereto 218:7
130:24,25	66:5 123:17	101:9 102:12	hey 131:23
131:3 165:16	138:12 165:17	102:17 103:5	167:25
165:18	heard 33:20	103:17 104:8	high 124:9
group 213:11	hefazi 2:13 3:7	104:18 106:10	128:25 129:14
	5:9,17 6:11,17	110:2 111:4	212:24

[hired - image]

hired 85:19 hold 144:14 208:1 holding 149:15 honest 11:15 horizon 38:16 41:19,25 42:10 42:16,19,21 44:5,16,17,23 44:24 45:7,8 45:13,16,24,25 46:2,3,6,12,15 46:17,19 47:3 47:6,18 48:10 50:20 52:21 59:7 88:24 104:15,23,25 105:5,6,16,18 105:20 106:1,8 106:21 107:4,8 107:10,17,18 107:24,25 108:7 109:6,7 109:9,10,22 111:3,15,18,19 111:22 112:1 112:13 113:23 114:12 134:17 138:8 141:4 142:24 143:11 148:14,18,22 148:23 149:7 149:10,15 150:1,6,7,23 151:8,15,19	164:5,8,10 199:25 200:19 200:23 201:4,6 202:2,3,15,18 203:5,8 204:7 204:12,18,19 horizontal 47:22 138:22 138:24 190:18 horizontally 138:20 139:16 141:18 hour 6:6 12:4 14:19 48:18 hourly 14:18 14:19 hours 6:7,8 11:16,20,23 12:1,10 13:2,4 13:7,8,9,11,16 housing 199:13 199:14,16,21 200:9 huh 27:7 61:17 63:1 71:3 105:9 106:7,7 107:20 109:12 134:4 136:23 145:23 153:10 155:4 161:8 hv 205:13 hyper 38:16 hypothetical 24:11 26:17 28:14 30:7,12	31:6 32:19 81:17 82:9 86:3 90:16 102:20 104:2 106:11 133:12 150:4,25 151:25 153:13 156:4 168:15 168:17 i i.e. 133:20 138:19 139:15 141:17 idea 159:1 ideas 130:11 identification 10:19 11:1,8 115:4 144:5 188:1,12 199:3 208:13 identified 7:14 identify 10:12 31:2,20 32:1 32:17 183:9,10 illustrate 49:12 illustrates 50:2 138:17 139:11 141:8 image 17:20,23 41:6,12,17 42:9,13 43:19 44:1,12 47:17 52:22 74:22 88:13,20,20 89:5 96:10	101:1,4,5 102:1,8,9 109:20,21,23 111:13,14,15 111:17 112:11 114:6,13 115:12,18 116:6,22,23 117:5,8,11 121:23 122:2 124:10,10,11 124:12,22 128:25 129:1 129:14 135:9 135:11,24,25 136:4,6,7,9,15 136:16,21,22 137:11,12,19 137:25 138:2,9 138:18,20,23 138:24 139:13 139:14,17,24 140:7,25 141:5 141:6,9,11,12 141:14,15,16 141:20,20,23 141:23,24,25 142:9,24 143:1 143:4,12,13 144:17 145:14 145:18,23 146:4,9 147:1 147:9 149:9,14 150:22 151:18 174:16,17,17
--	--	---	---

[image - inside]

174:19,21 175:21,25 176:4,10 177:8 180:19,23,25 181:1,6,11,18 181:23 182:2 182:13,17,21 183:5,6,8,12,18 184:2,5 185:5 185:5,10,17 186:21,22 187:7,8 190:9 190:12,15,16 190:16,17 193:7,9 203:22 203:24 206:15 208:4 210:18 210:20,24 212:24,25 213:4,20 imaged 100:20 102:2 images 100:17 101:15,17 115:20,21 116:24 124:11 124:14,21 125:9 129:1,2 129:5,7,15,16 132:4 135:8,8 135:22,22 136:13 138:3 139:13 140:1,6 140:6,9,20 142:1,4,6,14,17	142:19 183:4 183:15,17 190:6 199:21 200:9,11,13 203:3 205:9 212:20,25 213:1,3,12,15 213:16 imagine 39:8 130:5 imaging 175:17 impact 109:5 111:18 112:12 151:7 implementati... 54:2,9,12 59:4 59:12 implies 47:8 71:9 73:25 98:16 implying 94:24 important 23:22 24:21 152:14,15,16 152:18,22 imposing 96:1 improper 156:12 inaccurate 63:17,20 64:8 include 7:8 96:7 112:11 117:25 124:7 128:23 132:9 137:23 145:18	146:3 171:20 175:6 included 44:5 72:21 88:23 130:8 152:24 171:21 179:9 179:10,15 186:15 includes 44:7 59:21 60:11 61:1,15,24 66:11 74:19 76:9 89:1 90:12 95:20 96:6 105:21 106:9 108:1 109:2 142:14 142:16 146:3 164:23 including 17:14 44:18 73:5 94:4 95:9,19 99:11,18 105:1 107:10 128:6 132:24 136:17 142:17 148:15 inclusion 44:20 105:3 107:15 incomplete 106:11 inconsistent 22:13 23:9 incorporated 38:1 131:11 132:23	incorrect 8:14 28:3 86:21 increase 50:10 50:14 independent 45:22 65:22 66:24 67:23 98:11 indicate 18:15 103:19 indirect 112:16 113:12 individual 116:24 information 43:16,18 88:11 88:12 89:9,10 101:2,4,5,5,7 115:19 116:21 124:8,12 128:22,24 129:3,13 136:14 199:12 205:18,22 212:22 213:2 infringement 22:8 initial 3:14 9:16 10:1,21 11:11,20 63:23 173:14 210:19 input 175:20 inscribed 193:5 inside 103:21 194:3 195:14
--	--	---	--

[inside - know]

197:8 insta360 1:4 instance 83:21 89:25 93:12 95:9 121:20 122:15 149:2 160:4 203:21 203:25 206:14 206:15 intensity 178:19 intentional 200:18,24 201:5 202:19 202:22,23 inter 1:10 interactively 8:5 interested 38:13 215:16 interpret 81:7 interpretation 72:10 interrupt 43:1 43:6 85:3 92:18 171:12 interrupting 85:10 intrinsic 18:8 18:18 19:3,7 19:14,18 introduce 41:16 115:2 invention 16:11 115:18 132:22	144:16 145:11 145:12 investigation 20:1,20,23 21:8,21 22:9 22:12 23:10,24 25:1,16 investigations 24:16 involved 37:9 206:11 involving 20:1 20:16 36:23 205:17 ipr 7:4,9 13:5,7 14:14,22 22:14 23:25 84:11 85:17 188:14 ipr2024-01052 1:10 iprs 14:16 23:11 25:17 irrelevant 27:17,21 28:5 30:9 31:9 151:4 155:24 isolated 162:3 isolation 200:10 issue 39:19 158:5 184:10 202:1 issued 206:7 issues 152:3	itc 19:25 20:4,6 20:16,20,23 21:7,20 22:9 22:12,23 23:10 23:14,24 24:15 24:25 25:16 26:20 item 21:15 items 135:9,23 140:7 146:6 j jittery 50:19 51:2,4,5,8,14 52:11,12 55:6 julie 1:20 215:3 215:22 july 1:15 215:17 216:3 k kalman 208:24 katsaggelos 3:22 17:14 87:12 118:6,7 118:11 119:10 119:25 120:14 121:10 122:5 122:12 125:1 129:24 130:15 130:19 131:3,5 131:8 134:9 139:8 140:16 141:3 156:2,11 166:6,19 167:20 168:2,6	168:18 170:17 172:17 173:22 185:21 186:3,6 186:11 188:14 188:21 katsaggelos's 18:3 87:3,6 118:13,23,25 119:4 168:10 keep 45:25 46:2 46:5,16,21 84:8 91:3 94:20 140:16 145:8 169:8 keeping 46:4 46:23 139:1 keeps 46:9,10 keystone 147:1 kind 6:18 20:10 47:14 58:7 144:15 197:17 197:21 knew 158:9 know 5:3 8:4 13:14,15 19:13 19:19 20:6,20 22:19 26:13 28:19 30:15,15 30:20 32:7 33:13,22 34:17 36:7 39:2,10 46:5 47:10 49:19 51:11 53:4 54:19 61:14 64:13
---	---	---	--

[know - leveled]

65:21 70:18 75:3,10 78:23 78:25 79:11 81:19,25 83:16 84:8 86:12,25 90:15,18 91:10 91:11,12,21 92:2,7 95:1 96:6,22,25 97:2,2,10,20 101:15 103:23 106:2 120:12 120:25 121:1 122:16,19 124:21 125:15 125:25 127:18 128:4 129:8 130:1,12 134:2 134:18,19,21 134:24 139:2 139:22 143:9 147:23 149:20 150:19 153:1 153:13,13 154:15,15 155:23,24 156:3,5 160:15 161:16 162:3 162:10,20 167:15 168:25 169:6,6,10,13 169:19,20 170:2,7,9,11,12 170:13,20,21 172:6,8 173:15	173:22,23,23 175:6,19 179:7 179:23 182:13 182:22 183:23 184:8 186:1,6 186:9 190:5,14 190:25 191:22 192:5,7,11,12 195:10 196:2 196:13,23 198:21,22 200:17,18 201:11,12,17 205:17 206:7,8 211:5 knowledge 30:19 127:22 known 15:12 15:14 127:6 163:18 I labeled 58:18 123:9 190:12 190:13 191:14 193:2 207:22 landscape 198:4,6 language 43:12 59:18 60:4,7 60:25 68:13 69:1 72:1,2 73:12 78:17,23 80:16 81:1 90:2 91:17 92:1,12 93:3,8	93:23 96:3,3,5 96:22 100:14 114:21 122:3 124:24 languages 202:12 206:8 large 1:22 larger 191:25 193:7,9 largest 191:22 lawyer 7:20 8:6 8:17 laying 64:1 leading 212:9 213:7 lecture 156:7 leeway 171:8 171:12 left 58:9,13,14 190:15 192:15 legal 7:21 8:6 8:16 9:12 16:8 216:23 length 43:25 44:6,11 54:23 56:25 57:9 59:7 62:14,17 62:25 64:15,19 65:14,19 66:16 68:3,17,23,25 69:3 70:11 72:4,19 73:7 73:15 74:21 75:2,18 76:21 79:12,16 80:24	81:3,10 87:25 88:19,25 89:4 89:12,17 90:22 91:19 92:24 94:1,8 95:6,23 96:8,9 97:11 97:17 98:5,21 106:3,4 201:16 213:6 lengths 62:18 63:5 lens 38:10 40:11,23 41:6 41:11 137:23 174:21 175:1 175:18 176:4 176:10 177:8 178:20 181:5,6 181:9 lenses 39:10 40:1,9 175:18 letter 194:4 195:16,24 197:9 letting 171:7,11 level 6:18 45:25 46:3,6,12,17 47:2 104:15 107:4 leveled 42:10 42:17,20,21 44:16,17,23 45:9,16 46:19 47:18 50:20 52:21 59:7
--	---	---	---

[leveled - line]

88:24 104:23 104:25 105:5 105:16,18,20 106:1,8,21 107:8,10,17,24 107:25 108:7 109:7 leveling 41:19 41:25 44:24 45:13,25 46:15 47:6 48:10 105:6 107:18 113:23 114:12 134:17 138:8 141:4 142:24 143:12 148:14 148:18,23,23 149:8 150:2,6 164:5,8,10 199:25 200:24 201:4,6 202:2 202:3,15,19 203:5,8 204:12 204:18,20 li 2:3 3:5 4:7 5:14,23 6:14 6:23 7:7,24 8:9 8:18 9:2,14 10:13,20 11:2 11:9,22 12:3 12:11 13:23 14:6 18:7 19:1 20:5,18 21:5 21:16 22:7 23:1,21 24:13	26:7 27:1 28:22 29:3,25 30:23 31:18 32:4 35:4,15 36:15 37:22 39:23 41:3,18 43:3 45:10,23 48:14,19,25 49:11 51:19 53:16,22 54:7 63:22,25 65:4 69:13,17 71:2 71:21 74:2 76:22 77:2,5 77:13,21 79:3 79:25 80:13 81:23 82:6 83:5 84:4,16 84:22 85:1,8 85:16 86:18 87:14 88:4 91:8 92:17 94:2,13 95:12 98:1 100:4,11 100:24,25 101:19 102:15 103:2,10 104:5 104:13 105:8 106:12 107:1 108:11,15 110:6 111:8 115:5 117:6,16 117:17,20 119:2 120:8 121:3 123:25	131:1 135:17 137:5 138:5 143:7,17,21 144:6 146:7 148:4 150:9 156:12,22 157:7,9,17,19 158:3,14,22 161:7 163:3 165:25 166:20 168:24 169:12 171:14 172:22 173:6 174:6 176:7,13 178:12 179:19 182:1,18 184:13 185:2 186:13 187:23 188:2,6,13,15 192:9 194:15 196:16 197:22 199:4 201:19 202:17 203:11 204:10 207:7 208:14 209:16 209:18,21 210:3 212:9 213:7 214:2 lily 2:3 10:10 48:11 84:18 85:6 171:6 limit 79:13 163:25 164:11 183:19 203:12 203:15	limitation 67:3 67:14 69:24 85:25 209:2 limitations 71:25 limited 114:22 145:22 146:17 147:6,10 164:4 167:23 168:3 172:15 174:1,2 limiting 167:24 169:24 182:12 limits 164:2,15 164:19,24 166:3,22,25 167:4,12 168:25 169:14 170:7 173:1 line 49:24 50:7 52:16 53:24 56:20 59:1 60:17,18 61:5 99:10,15,16 100:22 109:3,4 109:17 111:6,7 111:9 112:8,22 113:21 144:12 144:15,20,25 145:3,4,4 146:14 148:7,8 148:9 172:20 174:8,13,14 176:5,6 177:6 178:13,14 187:4 193:10
--	--	---	--

[line - mean]

193:12,13,17 196:3 197:24 197:24 199:8 208:17 211:9 217:4,7,10,13 217:16,19 linear 41:16 lined 210:6 lines 52:17 55:2 113:17 208:16 listen 21:17 82:17 83:10 142:10 158:17 159:7 little 13:15 38:19 64:22 74:3 75:20 84:21 132:9 136:19 llc 1:4 216:4 217:1 218:1 llp 2:5,14 local 208:23 located 186:21 187:7,19 location 1:11 59:5,12,15,22 59:23 60:3,11 60:22 61:7,18 61:24 62:1 66:12 75:23 76:4,10,12,16 76:23 77:18 78:2,6,8,9,11 78:13,15 79:4	79:10,10,18,20 80:1,5,10,14,19 81:2,8,12 82:1 82:18,25 83:1 83:10 85:23 87:8,19,23 94:15 95:2,20 long 6:3 159:9 look 9:18 15:24 49:8,23,24 50:6 52:8,15 55:1 56:16 58:12 59:17,18 74:11 98:17 99:2,7 110:25 112:7,21 113:6 115:9 116:2 122:15,16 123:1 125:13 126:16 132:19 133:16 135:5 138:6,14 146:13 192:2 192:21,22 193:10 196:17 197:13,23 210:15 211:25 looked 37:25 152:5 166:5 looking 9:21 13:24 38:8 39:17 51:12 52:6 67:8 73:17 152:2 192:5 196:3	looks 94:23 138:1 190:14 192:6 los 2:16 lost 135:12 148:3 lot 130:5 132:12 163:13 171:8,11,20 202:11 207:10 207:12 213:9 213:19 lunch 100:23 108:12 m machines 145:21 made 131:2,20 218:5 magnolia 1:12 make 9:18 54:24 75:16 109:22 111:14 111:22 120:5 120:24 123:6 124:10,21 128:11 129:2 129:15,15 141:13 142:4 160:14,19 176:16 179:8 182:22 207:8 209:23 213:1 makes 111:2 112:1 125:25	making 104:1 142:19 183:24 203:18,18 manner 163:17 manufacturer's 40:13 mark 144:2 187:23 marked 9:23 9:23,24,25 10:19 11:1,8 58:7 115:4 144:5 188:1,9 188:12 199:3 208:13 market 40:19 marks 58:8 matches 45:1 matter 24:18 26:9,22 28:5 110:3 130:13 145:19 204:19 matters 25:4,9 25:10 26:4,23 130:14 207:1 maximum 54:21 55:7 mean 8:4 9:7 15:7,13,15 25:10 26:18 33:17 34:15 35:17 36:18 37:10,18,19,20 38:20 39:1 40:14 41:4
--	---	--	--

[mean - mentions]

42:2 45:18	149:19 154:6	70:9 72:7,8,24	128:13,17
46:2,3 47:23	156:6 160:4,12	75:2,10,19	132:15 212:14
51:24 55:12,20	161:19 163:7	78:6,8 88:2	meet 79:5 80:2
56:4 57:5,15	164:21,22	91:20 92:6,10	80:7,16 81:12
58:18 62:6,8	165:11 167:15	93:4 96:8,12	82:19 83:2,11
62:23 63:7	168:1,20 171:7	98:4 100:10,13	85:24
64:7 65:22	175:16 176:16	100:16,20	meeting 5:22
68:10 71:25	178:25 179:3	101:12 109:10	6:7
74:9 75:8,9	179:22 180:2,5	126:14,15	meetings 5:21
77:11,17,25	180:6,11,20	127:15 130:4	meets 78:22,24
78:16,21 86:9	182:8 184:6,24	134:22 156:16	79:1
90:13 92:11	185:25 186:1	179:1 180:9,10	memory 14:2
93:2 94:3 95:7	191:13 194:20	200:11 202:15	117:24 122:22
95:18,24 96:15	195:8,22 196:6	203:8,9,10	124:6 127:1
96:22,24 98:3	199:22 200:3	meant 15:12	174:16 212:15
98:7 100:18	200:17 201:4	90:1 126:22	mention 53:9
101:4 102:22	203:24 205:12	139:22	112:2 113:15
103:12,21	206:25 213:19	measure	195:18 198:13
107:6 108:4	meaning 14:24	126:20 127:6	209:9 212:16
110:9,17,18	15:8,10,22	127:19,25	212:19 213:13
119:15 121:12	16:4,21 17:1	measured 48:9	mentioned 7:1
121:13 123:1	21:3,13 22:6	125:17 159:20	15:3 19:7 26:9
123:14 124:23	23:6,16,20	205:25	27:2,5 53:18
125:10 126:5	24:8,19 25:6	measurement	77:10 116:11
126:11 129:21	25:12 26:2,25	122:20 139:3	119:8 134:5,12
129:23 130:21	35:13 45:20	192:7,11	152:25 161:8
132:11 133:14	55:17 100:19	measurements	176:19 191:9
136:7,8,10,11	136:6 179:1,24	129:11 130:1	198:18
136:12,13,15	180:2,7	137:8	mentioning
136:16,17,22	means 15:9,9,9	measures	118:10 134:15
136:24 137:22	15:16 45:13	122:18 126:2	148:21
138:25 139:9	46:23 47:6	127:9	mentions 51:4
140:22,22	51:21 56:2	measuring	125:19 198:10
142:7 147:17	60:3 63:5	117:23 123:21	200:8
147:19,23	64:15 66:18	124:5 126:24	

[metadata - noted]

metadata 136:17,25,25 137:12 methods 211:6 middle 43:15 144:15,23 192:1,2,15 mill 2:6 mind 38:17 minimum 211:7 minority 198:5 minute 57:18 196:21 209:22 minutes 143:17 mischaracteri... 22:18 mischaracteri... 197:17 misleading 205:4 mismatch 197:18 missing 192:25 misstates 196:15 mistaken 144:24 misunderstood 93:15 mobile 38:5 132:24 133:4,6 133:9,13 145:20,24 146:6,10	model 40:4,15 models 37:10 37:13,19,25 38:1,3,7 modified 52:24 mofo.com 2:8,9 moment 84:6 197:16 moments 99:12 99:19 209:20 month 14:13,17 morning 4:8,9 morrison 2:5 motion 42:9 89:24 91:3 motivating 38:2 mount 38:4 move 117:18 133:10,13 153:2 158:20 163:5 movement 164:1 167:5,12 168:3 170:8 173:1 203:13 movements 153:1 200:24 205:3 moves 133:11 133:13 moving 90:23 91:4 135:8,10 135:22,25 140:6,8	multiple 14:12 14:16 39:16 117:22 118:16 118:16 123:20 124:4,21 125:7 126:20 128:16 129:7,8,10,21 132:4 140:1,12 142:1,6,14,17 160:2 172:11 177:9 212:3,13 n n 3:1 naked 191:24 192:8 name 4:10 names 154:3 necessarily 39:13 93:5 154:2 201:10 201:14 necessary 193:22 195:3,6 196:11 197:3 218:6 need 5:12 12:4 36:5 39:10 42:24 54:19 71:5 88:9 121:4,19 132:3 155:14 160:5 175:22,23 180:22,22 210:5	needed 29:23 38:4 needs 9:7 neither 110:9 151:12 172:25 networked 39:15 never 125:5 147:20 151:6 161:10,12,12 161:23 162:14 162:17 164:24 169:5 170:10 170:12,12 182:20,23 183:11 184:2 184:22,22 202:21 204:14 new 25:24 115:2 nima 2:13 6:1,4 216:1 nimahefazi 2:17 216:2 non 41:16 52:24 178:5 nonresponsive 61:4 166:10 north 1:12 notary 1:21 218:13,19 note 146:16 216:10 noted 117:16 218:7
--	--	--	--

[notes - okay]

notes 215:10 notice 1:22 noticeable 109:22 111:3 111:15,19,23 112:1 number 12:5 116:7 117:9 165:23 172:7 189:5,6 207:15 numbers 10:12 208:17	51:16 53:11 64:8 65:3 69:11,15,18,19 71:16 73:10 75:25 76:25 77:19 78:18 79:21 80:4 81:14 82:5,21 83:13 84:14,25 86:1 87:10,21 91:5 94:6,16 96:18 99:25 100:6 101:9 102:12,17 103:5,17 104:8 106:10,13 110:2 111:4 117:19 118:21 119:21 120:11 123:23 137:2 137:14 145:25 147:15,16 149:17 162:8 165:5 166:12 168:5 169:2 173:5,12 178:3 179:11 182:4 183:13 184:17 185:18 192:4 196:14 201:1 201:23 202:20 203:14 206:21 212:9 213:7 objections 77:5 84:23 85:2	106:14 objects 102:1 obtain 43:16 88:10 obtained 89:9 obtaining 206:2 obvious 120:5 120:24 123:7 128:11 obviously 156:14 206:7 obviousness 121:14,15 162:16 october 9:17 10:2,22 offer 151:2,24 153:12 155:9 155:14 156:4 165:1,7,22 167:18,22 168:22 169:9 169:17,22,23 170:14,17 171:23 172:1 172:19 173:20 173:22,25 182:22 186:5,8 195:23 209:11 offered 33:24 118:10,24 119:16 120:1,4 120:16,17 121:10 122:5,6	124:18 134:9 151:6,23 152:9 152:12,23 153:15 155:6 160:23 161:24 162:14 164:14 164:16,22,24 167:19 168:19 170:3 171:17 173:16,18 186:9,10 195:8 offering 119:10 122:12 134:11 149:22 152:11 152:14,21 154:12,13 155:5,22 162:12 170:1 170:13 172:2 174:2 183:24 183:25 186:12 offers 168:18 office 1:1 oh 10:4 135:19 145:9 189:5 192:25 211:19 214:2 okay 4:22 5:3 7:3 9:4 10:9 13:11,14 18:14 19:25 31:19 32:22 35:20 36:16,21 38:9 39:24 40:17 46:20,22 47:1
o			
oath 4:13 object 5:12 22:17,17 25:19 31:3 53:19 63:16 85:4,14 104:19 117:13 153:18 156:9 163:4,10,15 197:16 object's 163:2 objection 7:18 8:2,12,23 9:4,9 11:17,24 12:7 13:22,25 17:3 18:19 20:2 21:9,22 23:12 24:1 26:11 28:12,25 30:5 32:2 35:8 36:10 37:16 39:12 40:25 41:13 45:14			

[okay - opinions]

47:4,13,19	180:12,19	30:18 33:10,24	164:16,23,25
50:5,23 52:5	187:4,21,21	34:2,6 35:10	165:7,23 166:8
53:3,8,17 55:1	188:7,7,9,19	35:13 36:1,13	166:8,21,24,25
60:5,14 69:20	189:8,9,14,17	36:14 40:20	167:2,6,19,19
72:13,19,23	191:4,9,9,20,24	41:2 49:15,18	167:22 168:7
74:13 75:5,20	192:17 193:14	52:3 55:16,19	168:23 169:10
77:6,14 79:4	196:1,20 198:3	55:22,24 56:1	169:16,17,18
80:14 83:7	199:11 200:5	56:5,6,10,12	169:23,23
84:6 85:5,15	205:12 206:24	57:4,12 60:5,6	170:1,2,13,14
88:10 95:14	207:18 208:8	61:17 65:18	170:17,19
98:17,17 99:7	208:20 209:5	68:11,19 69:8	171:18 172:2,3
103:3 105:20	209:13 210:9	70:13 75:5,13	172:15,19
107:2,25 108:7	211:11,19	75:22 76:3	173:16,20,25
108:10 109:8	213:25	79:19 81:13,25	174:3 177:20
109:12 110:20	omitted 197:21	82:3,20 83:12	177:23 178:8
110:23,25	once 70:25	83:22 86:4,16	178:11 179:13
112:2 113:18	83:20 181:12	86:16,24 87:6	179:17 182:9
114:16 115:1	183:1	88:6 95:18,18	182:23 186:5,8
116:19 117:16	ones 22:4 28:8	95:25 96:5	186:9 192:14
117:21 120:9	38:7 85:10	97:20,24 100:2	195:9,23
121:4 124:2	118:15 120:6	100:5,10	202:22 204:11
125:12 130:7	190:11 206:9	101:11 102:14	205:5 209:11
131:22 132:16	operation	102:16,21,23	opinions 7:9,12
134:12 135:20	163:19	102:25 103:3,9	7:13,19 8:8
136:3,19	operations	104:11 118:23	16:25 17:15
142:22 144:11	205:11	119:1,15 120:2	18:2 20:17
144:14 145:9	opined 14:21	120:15 121:1	22:3 23:5,10
146:13,16	18:23 19:18	147:22 148:14	23:18,24 25:3
147:5 154:1	opinion 9:11	151:3,4,6,23,24	25:25 26:5
155:16 158:16	14:3,3 15:2	152:9,11,12,14	27:13,24 28:9
159:8,13	18:10,17,25	152:23 153:15	29:5,9,19,22
164:17 168:2	19:5,11,22	154:12,13	30:4,22 31:10
174:7,7,24	21:4,14 25:24	155:5,6,9,14,22	31:17,23 32:7
176:2,15	27:18,24 28:20	160:23 161:24	49:16 56:7
178:13 179:23	29:24 30:10,18	162:12 164:14	73:4 87:4,4

[opinions - paragraph]

100:8 118:13 118:20 119:6 148:12 152:20 152:23 156:10 157:1,4,15 162:18 166:1 166:15 168:11 169:4 171:11 171:23 173:17 177:16 178:2,9 179:15 186:11 186:12 opportunity 32:5 165:1 167:8,16,16 optical 146:24 optically 193:21 194:3 195:2,15 197:8 optics 138:3 optimal 193:18 194:24 options 130:8 order 154:4 ordinarily 15:18 ordinary 14:23 15:7,22 16:3 16:10,12,14,21 17:1,16 21:12 22:20,23 25:21 34:19,23 41:24 52:1 69:8 100:19 132:17	orientation 117:23 123:21 124:5,12 128:18 129:3 136:14 212:14 213:1 orientations 129:8 original 9:24 16:7,17 17:9 24:7 26:18 67:21 175:14 181:4,6,23 182:17 183:8 186:22 187:8 213:23 orlando 1:11 1:14 orthogonal 161:3,5 output 41:17 47:17 175:25 193:18 194:24 198:5 outputs 122:20 outside 20:13 24:9 25:13,22 31:20 117:14 120:23 121:1 147:16 169:3 171:10 overall 47:14 own 6:22 owned 207:13	owner 1:8 2:18 206:10 207:13 p p.m. 1:16 108:14,14 143:20,20 214:5 pacurariu 3:24 208:10 209:6 210:13,23 211:3,4,4 page 2:6 3:3,11 10:3 16:8 28:15 42:4 43:14 58:2 63:23 123:10 123:12 187:4 188:19,22 189:5,6,6 193:10,12 196:3 197:13 197:24 217:4,7 217:10,13,16 217:19 pages 215:8 palo 2:7 pan 92:8,9 panning 59:7 91:13 panoramic 116:22,23 117:5,11 121:23 122:2 124:11,12,22 125:9 129:2,9	129:16 212:19 213:1,4,20 paragraph 16:9,16,17 17:7,9 18:1 28:15 36:3 52:7 53:7 55:2 67:1,6,10 69:21 113:7 115:15,25 116:2,11,14,17 116:20 117:2 117:18,21 118:19 119:5 119:20 120:10 121:5 122:16 122:25 123:19 123:24 125:2 125:11,24 126:8 127:11 128:7,15,21 129:12 131:4 131:15,17,19 131:23,25,25 132:2,5,14,19 133:5,16 135:5 135:13,13,18 137:23 138:1 138:15,16 139:1,5,7,9 140:2,10,14 143:3 144:25 170:4 171:1 172:20 175:3 176:2,19,25
---	---	--	--

[paragraph - phone]

177:4,14,16,22 186:25 187:1,5 188:23 189:2 196:18,20 197:1 208:11 209:5,10,15 210:13 211:22 211:25 212:22 paragraphs 118:24 121:21 123:2,4 parallel 20:3 parameters 152:3 paraphrased 162:11 paraphrasing 82:24 158:24 159:1 parenthetical 114:5 part 99:20 104:14 110:15 110:17 113:15 119:24 121:9 121:12,22 122:1,3,4 124:25 145:5 169:10,21 170:15 172:3 174:24 195:20 196:13 197:5 partes 1:10 partially 90:24	particular 6:22 14:11 15:2 21:4,15 23:15 28:15,18 40:4 40:15 53:13 58:23 93:5 97:22 112:6 117:3 141:6 142:25 143:13 160:3,5 167:1 177:14,15 203:16 particularly 115:19 parties 215:13 215:14 parts 110:19 197:4 pass 214:1 passage 112:3 114:11 121:18 198:17 passages 118:9 119:13,17,23 120:6,19 128:6 passed 209:25 past 93:21 97:8 patent 1:1,3,8,9 2:18 3:13,18 3:19,20,23,24 7:4,10 9:23 10:14 13:5 14:11,23 15:23 20:1 22:15 35:2 41:21	42:2,3,4 45:12 45:19,21 48:6 49:7 51:7 52:16 53:3 54:8 55:18 56:17 58:1 59:11 85:18,20 91:14 108:22 112:23 113:1,7 113:18 114:12 120:5,24 122:3 123:6 148:20 149:5,7 202:8 202:11,18 203:4,7 204:1 204:11,17 206:6,10,10,18 207:5,13,13 patents 14:12 path 156:5 people 154:5 160:17 percent 175:14 perfect 134:17 134:21 perfection 134:20 perfectly 11:15 109:11 perform 144:17 145:13 175:9 175:23 181:13 performed 113:24 146:18 202:19 204:12	period 37:5 95:10 person 16:9,14 17:15,17 34:19 34:23 41:24 52:1 127:18 132:17 personal 145:20 personally 8:21 170:20 213:9 perspective 162:6 pertinent 16:13 petition 122:6 169:4 petitioner 1:5 2:10 117:15 119:9,25 121:2 121:10 122:6 122:12 123:5 124:19,25 129:23 140:17 148:1 149:21 166:6,19 172:18 petitioner's 3:10 10:18,25 11:7 115:3 144:4 187:25 188:11 199:2 208:12 phone 133:9 145:24 149:1 149:14
---	--	---	--

[phones - portions]

phones 145:21 146:6,11 photographic 115:13,19,21 photographing 174:21 176:4 176:10 177:8 178:20 phrase 33:20 73:5 197:2 physically 7:25 8:11,21 picked 116:17 picking 176:24 pictorial 136:6 picture 58:15 149:3 pictures 100:16 pillar 194:5,8 194:20 195:9 195:16,23 197:9 198:6,10 198:22 pilot 39:1 pinpoint 161:22 pitch 153:6,8 153:24 155:15 155:17 156:5,8 156:20,25 157:21 158:9 158:25,25 160:25 163:5,8 163:8 166:3 173:2 205:22	pixel 101:7 place 34:1,5 53:13 56:13 placed 161:17 placement 42:14 44:8 45:3,4 59:20 60:2,9 61:2,15 61:22 62:6,7 62:22 64:18 65:13,15,22 68:22,24 71:10 72:3 73:18,23 75:17 76:2,3,7 77:12 78:12 79:10 80:6,10 81:2 87:24 89:2 94:4,15 95:20 98:14 113:24 114:4 places 38:25 plain 21:2,12 21:13 22:5,19 22:22 23:6,16 23:19 24:7,19 25:5,11,21 26:2,25 35:12 45:20 46:24 59:17 60:4,7 60:25 68:13 69:1 72:1,1 73:12 80:25 91:17 92:1,11 93:2,7,23 100:19 114:21	124:24 136:5 178:25 179:24 180:1,6 planes 116:7 117:9 platform 38:5 please 4:10 5:3 5:5 6:18 18:15 18:21,24 19:4 19:17,23 27:4 29:12,13 34:1 34:8 35:11 36:2 42:25,25 49:22 53:14 55:23 56:13 57:14,15 64:7 67:6 69:17 77:2 82:12 83:9 84:16,22 85:1,2 92:15 92:18,20 102:4 106:12 158:19 168:1 170:3 171:2,5,6,12 188:22 plural 125:22 126:23 136:7 139:20 141:15 plurality 116:5 116:24 117:7 117:25 118:4 121:17 122:8 124:7 128:23 208:25	plus 21:3 30:20 point 6:12 18:21 19:4 25:2,9,10 26:3 34:1,5 35:11 35:11 36:2,5 38:2 40:6 46:23 49:22 60:2,16 66:20 74:17 76:16 90:23 93:15 95:10 125:18 130:14 158:21 164:18 167:3,9 167:11 184:15 185:4,7,14 203:17,18 211:2 pointed 22:5 176:2 210:12 pointing 58:24 61:12 138:25 139:5 197:19 197:20 points 200:6 portion 8:10 53:9 89:25 90:7 93:17,20 95:1 105:21 106:5 108:1,3 119:11 182:13 186:21 187:6,7 portions 8:20 27:16 96:25 120:3 128:9
---	--	--	---

[portions - progress]

171:24 192:18 portrait 198:5 198:7 posita 15:10,15 15:19 18:4 45:19 55:17 62:9 64:20 65:11 68:1,21 70:23 89:15 101:14,17,21 101:25,25 102:7 103:12 103:15 104:6 127:5,22 130:6 136:18 137:10 137:16,17 150:20 155:17 155:19 posita's 103:24 109:8 136:8 position 43:16 43:17,19 45:6 62:15 71:13 88:11,12 89:9 89:10 114:23 146:19 189:22 190:2,4 199:11 200:8 positions 23:23 24:15,25 25:16 42:15 44:1,12 74:22 88:13,19 89:5 199:12,14 199:16,20 206:3	possibilities 91:14,18 93:9 131:25 possible 40:18 48:1 95:8 211:7 potential 134:19 potentially 163:11 195:24 precise 12:5 68:5 192:10 preferably 133:18,20 134:2,24 preparation 6:10 prepare 5:15 6:3 present 31:13 31:14,15 144:16 145:11 145:12 presented 31:23 presenting 177:22 presumed 16:12 previous 106:5 previously 92:7 92:9 prior 81:11,17 81:20,21 82:9 82:10,13,17,25	82:25 83:4,15 83:19 84:2,5 86:5,6,8 90:17 90:18,19 97:23 115:7 141:2 144:3,8 160:3 160:6 161:15 170:22,25 187:24 188:17 199:5 208:10 priority 15:11 34:24 35:2 45:11 55:18 65:12 127:5,23 137:4 probably 8:5 101:3 110:21 172:11 problem 151:13,15 164:6,7 202:3 203:1,2,20 204:17,22,23 204:23 problems 180:24 203:6 204:25 205:6 205:14,19,20 procedures 4:23 proceeding 13:5 84:12 85:18 proceedings 7:4,10 14:22	22:14 188:14 214:4 process 5:12 processing 17:21,23 115:18,23 117:4 145:5,10 produce 41:11 66:6 produces 41:6 production 216:15 professional 1:21 33:2,3,5,6 33:10,11,11,14 33:16,17,18,25 34:3,9,16,18 36:2 215:4,23 progress 15:5,6 43:20,24,25 44:2,6,10,11,13 54:22,23 56:25 56:25 57:8,8 59:6,6 62:13 62:14,17,17,18 62:18,24,24 63:4,4 64:15 64:15,19,19 65:13,14,19 66:16,16,22,23 68:2,3,15,16,17 68:22,23,25,25 69:2,2 70:10 70:10 72:4,4 72:18,18,21
--	---	---	---

73:6,6,14,15,24 73:25 74:1,20 74:21,23,23 75:1,2,18,18 76:21,21 78:4 78:4,13,14 79:11,11,15,16 80:7,12,23,24 81:3,3,9,9 87:25,25 88:14 88:14,18,18,21 88:25,25 89:4 89:4,6,11,12,17 89:17 90:5,7 90:22,22 91:19 91:19 92:23,24 93:25 94:1,8,8 95:4,5,6,22,23 96:7,8,9 97:11 97:17 98:2,5,5 98:7,8,15,15,20 98:20 106:3,3 106:3,4 199:17 206:3 213:6,6 project 38:3 projection 147:2 projects 36:22 36:23 37:9 pronounced 50:18 55:6 proposed 20:22 21:7,20 22:11 24:24 25:20	proposing 22:19,22 23:9 prove 121:14 provide 5:5 42:16 45:7 151:1 156:9,13 156:16 179:21 180:1,3 provided 57:13 116:6 117:8 122:17 128:10 157:15 166:7 166:18,18 167:20 168:6 168:12 170:16 providing 42:11 proving 121:15 public 1:21 218:19 punched 42:21 105:14 106:6 107:14,23 108:6 punchout 42:11,11,14 44:18 45:5 105:1 107:11 purpose 165:10 purposes 204:2 204:4 pursuant 1:22 put 42:1,6 54:25 57:16 80:8 86:10	97:18 117:2 121:19 124:16 132:3 154:6 163:13,16 168:16 177:1 179:22 putting 130:9 168:15 194:11 q quality 124:10 128:25 129:14 212:24 question 8:19 12:19 16:19,23 17:6 18:5,6 19:17 21:18,19 21:25 22:25 24:4 26:17,18 27:4 28:14 29:2 30:6,13 30:16 31:6 32:19 33:8,17 33:24 34:7,13 34:14 40:8 41:8,9,15 43:7 46:7,13,14 47:23,24 52:5 55:14 61:4,9 63:24 66:4 67:18,21,21 68:4 77:15,16 79:23,24 81:20 81:24 82:7,9 82:16 83:6,8,9 84:2,7,10,13,17	85:4,11,14,15 85:21 86:13,20 86:22,22,23 94:19 97:21 102:20 104:10 106:16,17,24 106:24 113:3,4 113:5,6 133:12 137:21 142:10 142:21 143:8,9 148:2 150:5,11 150:15,25 151:25 152:21 153:14,23 155:14 157:25 158:1,15,16,17 159:6,12,15 162:11 169:13 170:6 172:7,13 173:19 181:25 182:5 185:14 205:4 212:17 questioning 100:22 questions 5:2,6 24:11 85:3 86:14 87:1,2,4 157:3,14 158:8 171:10 210:6 211:22 quick 138:6 quinn 2:14 quinnemanue... 2:17 216:2
--	--	--	--

[quite - refer]

quite 207:10 quote 196:1,11 197:5,11 quoted 196:10 quotes 194:11 194:14 197:2	110:13 118:2,3 119:23,24 121:18,20 122:10 124:2 124:17 125:11 125:24 130:7 136:12 138:11 141:7 143:3 145:16 146:2 172:5,11,13,23 174:25 176:15 187:6 195:17 195:21 196:21 196:22 197:17 198:18 200:8 202:5 210:15 211:9 214:3 216:9 218:5	129:12 132:22 133:18 135:7 140:10 146:12 174:15,16 195:13 199:11 208:15,21	recited 61:18 recites 56:23 99:10 108:24 recognize 38:6 189:11 recollection 6:25 36:3 49:20 63:9 82:23 record 4:11 9:15,20 10:11 10:14 22:18 56:22 58:17 63:1 64:2 85:8 116:22,22 135:7,22 140:5 215:9
r	reading 37:2 57:21 63:22 64:12 65:8,10 66:9,25 68:5 68:12 70:9 71:18 80:25 111:12 116:17 121:21 126:9 135:14 136:10 137:22 145:8 178:6 197:6 200:4	real 138:6 really 130:13 reason 4:16 119:8 120:21 120:22 216:11 217:6,9,12,15 217:18,21 rebut 87:3 134:10 156:1 156:10 166:17 170:16 173:21 rebutted 168:10 rebutting 118:13,23 134:10,11 168:13 171:24 recall 19:2 113:17 116:13 134:7,15 149:6 152:15 177:12 212:4 receipt 216:17 receiving 91:23 recenter 175:23 recentering 175:7 180:21 recess 48:23 108:13 143:19	recorded 122:22 126:25 138:24 recorders 145:21 recording 115:20 records 198:4 rectangle 190:5 193:5,19,20 194:25 195:1 rectangles 207:20,22 reduces 112:12 reducing 109:5 175:12 refer 6:19 16:5 17:25 19:17,23
r 217:3,3 range 12:6 178:18 rapid 50:18 51:5,8,14 52:11,12 55:6 rate 14:18,19 14:20 rather 31:15 55:4 110:13 119:14 179:18 181:2 ratio 189:25 198:6 ratios 191:11 raw 136:16,22 read 41:21 42:3 45:2,21 47:10 48:6 54:19,24 56:8 60:21 61:7,14,20 63:8 64:7,9 67:22 69:20 74:16 75:9 77:25 88:9 91:25 104:16 105:10 107:7 108:25 110:13	reads 56:22 109:19 112:10 113:23 117:21 123:19 128:3 128:19,19		

[refer - rephrase]

28:14 32:12 47:21 48:4 49:20 53:13 56:13,14 57:14 57:15 82:16 83:17 86:9 87:13 111:1,20 127:7 137:11 154:5,21 160:17 161:11 167:24 196:6,7 reference 128:4 170:22,25 211:13 referenced 216:6 referred 16:11 81:22 118:12 134:7 153:24 206:17 referring 16:16 26:14 28:17 48:3 49:21 51:9 53:14 65:9 78:12 80:18 82:14 88:1 93:24 99:20 110:24 118:16 122:25 125:6 128:12 129:24 130:20 131:5,23 139:8 139:10 176:11 181:12 185:22 185:23 186:4	191:15 202:8 206:13 207:6 refers 42:20 47:20 62:4 111:25 127:20 138:2,15 161:9 212:2 refrain 85:1 106:12 refresh 6:25 refuse 158:4,7 refusing 156:13 156:16 157:25 159:10,11 regarding 17:1 17:15 24:4 regardless 70:21 162:17 164:3 207:3 region 181:22 182:2,12,15,20 183:7,11,20 184:21 185:16 203:22,24 204:6 regression 208:23 relate 155:13 related 118:8 119:13,17 120:6 122:13 147:23 relates 104:21 115:18 132:22	relating 143:24 160:9 relative 190:4 190:21,24 191:1,3,7 215:12,13 relatively 192:2 relevance 149:25 154:17 154:20 156:2 156:14 178:5,5 relevant 6:21 16:10 25:17 26:15 27:10,15 28:2,5,10,23 29:4 30:4,14 31:1 148:11 149:20 152:19 154:15 162:16 165:22 177:16 177:18 178:2 relying 27:24 32:13,21 70:16 118:7,7 126:17 140:17 remain 56:7 178:9 remaining 121:22 remains 9:10 24:2 31:22 36:11 55:21 67:20 168:9 remember 4:20 8:3,10,20	11:12,14,19,25 12:2,9,10,12,14 12:16,18,20,22 13:1,6,12,18,20 14:7,10,13,16 19:6 36:1 37:2 37:11,12,15,23 38:11,11 39:21 39:21 53:12 66:5 112:4 153:4 172:8,10 176:21 196:5 remind 111:6 180:22 209:14 removal 175:9 181:13,20 remove 175:2 175:22 182:14 183:2,3 200:19 201:7 removed 200:20 removes 112:16 113:12 181:3 removing 112:23 113:2,8 175:7 200:24 repeat 24:19 27:4 41:8 52:17 188:22 206:14 repeating 34:13 rephrase 27:19 29:2 77:15
--	---	---	--

[rephrase - rotation]

106:25 report 215:6 reporter 1:21 7:6 20:24 22:21 35:3 49:9 54:5 63:19 116:25 143:6 161:4 181:8 194:12 204:9 215:1,4 215:23 represent 37:4 53:17 63:10,10 172:24 196:9 representation 53:21 63:17 representing 135:10,24 140:8 requested 215:7 require 64:4 65:15 71:22,24 87:7,16,19 88:7 89:13 152:2 202:18 204:12 required 69:6 71:13 218:13 requirement 74:10,12 requirements 71:25 requires 56:8 65:1 69:9 73:7	75:6,8 76:23 162:1,1 200:24 requiring 67:3 67:14 68:6 69:24 70:5 77:8,11 93:3 reread 194:1 rerotation 47:21 respect 97:8 127:10,20 130:1 189:22 208:4 respective 190:2 respectively 174:18 respond 24:4 24:10 25:3 84:1 responds 91:24 93:24 responses 5:5 responsive 166:13 rest 54:20,25 restrict 69:14 69:17 result 50:18 212:15 results 117:24 124:6 resume 35:5 return 216:13 216:16	reveal 5:18 20:10 review 1:10 6:9 215:7 216:7 reviewed 6:16 17:13 170:22 170:24 171:4 right 10:1 19:8 23:8 30:1 34:4 34:20 35:11 46:1 47:15 49:6 51:6,12 53:5,23 54:10 58:10,20 71:11 75:7 80:3 95:19 108:2,11 114:14,18 115:9,13,24 123:9 129:16 134:14,18 146:11 147:7 150:12 151:19 161:9 166:23 167:11 176:17 185:12 189:2 189:19 190:6 191:11,12,14 191:16,23 192:3,16,19 194:9 197:3 198:14,25 199:21 200:9 201:24 208:2,5 209:7,17 210:6	rigid 153:18 156:8,23 163:2 163:10 road 2:6 robots 145:21 roll 153:6,8,11 153:25 154:23 155:1,3,9,15,17 156:5,8,19,24 157:6,21,22,23 158:9,23,25,25 159:16,17,18 159:19,20,21 160:8,9,10,24 160:24,25 161:9,11 162:6 162:13,14,24 163:5,8,8,23 165:4 166:3 173:2 205:22 rotate 163:7,11 189:24 rotates 163:15 189:22 190:1 rotating 90:6 90:11,12,24,25 91:13 93:13,13 190:9,13,18,25 191:1,2 rotation 42:12 43:21 47:11,12 47:16,21 48:1 48:7,8 52:22 73:19 75:17 88:7 89:13,18
---	---	--	--

[rotation - says]

90:10 91:10 93:20 94:4,15 95:11,21 97:1 97:7 98:15 114:5,13,20,22 114:22,23,24 115:12 116:8 117:22,22 122:17,22,23 123:9,16,18,20 123:20 124:3,4 124:4 125:16 126:9,13 127:1 127:11 128:16 128:17 131:12 131:16 132:6 133:19,24 139:2 141:5 153:18,19,22 154:5 160:11 163:2,18 190:20,21 191:7 200:18 201:12,21 202:19 204:13 205:13,25 212:2,3,11,13 rotational 42:15 43:16,17 43:18 44:1,11 45:6 62:14 74:21 88:11,12 88:13,19 89:5 89:9,10 91:22 142:25 143:12	146:23 199:14 199:15,20 200:8 203:13 205:2,18 206:3 rotations 163:9 201:7,10 205:7 row 174:12 rude 85:7,9 s s 217:3 sampled 193:19,20 194:25 195:1 satisfy 79:19 82:3 86:7 satisfying 83:25 savitzky 208:23 saying 16:8 18:1 23:17 24:3 25:23 27:12 28:3,6 29:21,21 39:19 42:18,19 46:8 46:9,11 57:12 57:14 60:7 61:1 64:16 65:8,17 68:12 68:20 69:5 70:3,7,22 71:19,24 72:2 72:14 73:5,12 75:15 76:5 77:9,23,24 79:2,9,13 81:1	82:9 86:6 88:2 90:4,17 91:4 92:3,22 93:4 94:20,21 116:20 121:14 123:7 125:2,21 125:22,22 126:18 127:9 128:12 131:10 131:24 136:21 139:1 140:16 141:11 142:7 149:3 152:9,11 155:15 156:25 159:1,3,23 161:25 162:24 168:1,15 171:9 171:15 172:1 172:21 177:3 177:13 182:25 183:1 184:1 185:23 190:24 197:21 198:23 200:23 201:3,6 201:20,25 202:4,24,25 204:15,16,16 205:16 210:1 says 42:4,6,8 43:13,15,22 44:15 45:2,3 47:11 48:8 52:12 54:11,11 54:12,21 57:6 59:14,14,18	60:24,24 61:13 61:13,14,20 62:6,10,11,16 64:6,7,9,14 66:10,15,22 68:14 72:23 74:11,13,17,25 75:9,9,12,13,16 76:18,20 77:9 77:11,23,25 78:1,5,9 79:14 80:9,11,17,17 80:17,19,22,23 81:1 87:12,22 87:23,23 88:10 88:16 89:8 90:19,21 93:8 95:5 98:18 99:17 104:23 105:10,11 107:8 110:10 110:10 111:17 111:24 113:11 114:17,22 121:22 122:14 122:14,17 124:2,3,20 125:7,10,10,13 125:25 126:2,8 126:9,18,20 127:3,3,8,11 128:22 130:4 132:4 134:2,3 134:3,23 135:21 136:11
--	---	---	--

[says - sentence]

137:22 138:12	188:8 190:16	160:1,22	128:16,17
138:17 139:11	196:12 197:6	174:22 176:15	129:25 130:16
139:14 140:5	208:1 213:18	176:24 178:15	131:12,16,24
141:8,14,16,19	secondly 38:15	178:21 189:9	132:6,8,9,11,13
142:9 144:16	62:8,10 124:19	189:14,18,21	133:19,25
145:5 146:16	186:3	191:11,13	137:4,6,12,25
147:17,18	section 197:20	193:1,15,23	206:1 212:2,3
148:9,9,10	see 50:1,3,12,16	194:6 195:6	212:11,13
168:2 175:19	50:21 51:3,22	197:25 198:8	sensors 48:9
175:20,21	52:20,25 53:1	199:18 205:15	96:10 116:5,22
176:8 177:6	53:2 54:1,4,6	207:19,24,25	117:8 118:16
178:15 180:23	55:4,10,11	208:2,3,15	122:23
182:23 183:10	57:2,11 58:4,6	209:3 212:20	sent 216:14
184:15 185:4,9	59:9 66:20	seems 75:16	sentence 54:16
185:15 194:16	67:16 70:19	seen 30:7,8	54:20,25 55:2
195:4 197:7	71:7 85:22	sees 102:8	59:14 60:21
198:3 200:12	86:10 95:24	segments 198:7	61:6,10 67:12
203:22 208:10	98:22 99:4,6	selected 210:19	82:12 91:16
209:8,8 212:10	99:14 100:17	sense 27:14	102:4 110:16
212:11,11,22	102:1 108:24	30:10 31:10	110:21,22,25
212:25 213:16	109:19,24,25	47:15 71:7	111:1,20,24
scenarios 38:15	112:19,20	78:24 90:2	112:6,21 113:7
38:20	116:9,10	121:8 137:18	113:11 116:18
scene 39:11	118:25 120:21	162:25 163:1	121:20,22
109:3	120:22 123:3	sensed 96:9	124:17 125:11
science 17:18	126:21 129:17	sensor 91:23	126:7 127:14
scope 117:13	129:18 133:1	117:22,23,25	129:12 135:18
117:14 147:16	133:22 136:2	122:17,22,23	135:19 140:4
151:1 169:3	136:11 139:24	123:4,9,16,18	144:24 146:2
171:10	141:11 144:15	123:20,21	146:12 176:11
second 12:21	144:18 145:9	124:3,4,5,7	178:6 179:8
12:23 13:3	146:16,20,21	125:8,14,16	195:7,13,17,20
39:25 58:13	147:3 149:25	126:9,13,17,19	196:2,12 197:6
60:15 98:18	154:19 156:2	126:20 127:1	198:10,15
130:3 144:14	159:13,22	127:12 128:13	200:4,7 202:6

[sentence - size]

210:16 212:1 sentences 176:25 separate 184:10 sequence 135:9 135:23 140:7 211:9 sequential 135:10,24 140:8 series 210:24 set 18:2 36:25 132:23 163:16 164:10 several 124:10 129:1,15 172:24 212:24 shaded 189:15 shake 144:17 145:14,24 146:9,18,24,25 147:7,9,9,14 148:6,10,13,15 148:17,17,18 148:19 149:14 150:2,8,22 151:14,18 163:25 164:3,8 164:12,13,19 165:4,4,11,12 165:20 166:3 166:22 169:1 169:14 174:17 174:19 175:8,9	175:21,23,25 177:4 180:25 181:1,16,17,20 182:14 183:3,3 shakes 149:4 183:21 shakiness 149:14 shaking 149:2 149:9 151:7 182:11 shape 73:20,22 75:17 98:14 165:14 178:8 sheet 216:11 short 48:13,16 48:20 108:12 143:16 188:3 shorthand 215:1 show 18:24 19:9 53:14 55:23 66:6 87:11 129:20 130:3,12 154:17,19,20 167:25 170:4 171:2,16 173:15 178:10 180:19 186:24 showing 181:24 shown 51:14 53:5 132:6 185:11 191:23 193:6	shows 58:4 123:8,15 129:20 131:12 138:8,18,20 139:12,17 141:4,9,19 167:11 175:4 180:21 181:15 185:24 sic 74:23 side 39:17 58:13,20 191:11,12 208:2 sign 216:12 signal 91:23 103:21 122:21 signature 215:21 signed 9:13 14:15 216:19 significant 175:13 similar 202:12 206:9 simple 81:24 82:7 84:10 212:12 simply 77:4 simulate 55:8 55:12,17,20,25 56:2,12 57:1,5 57:9 59:7 simulating 51:7 51:13,18,20,23	51:24 52:1 55:5 single 39:15 118:17,17 125:14,16,20 128:13,13 129:25,25 130:16,17 132:13 140:24 143:4 161:20 172:20 194:13 singular 122:18 122:21 125:15 125:15,19,23 126:22 141:15 sitting 8:20 19:2,13 30:24 31:6 33:12 34:11 35:20 36:7 86:19 164:17 167:4 167:10 173:3,7 173:9 174:3 situation 168:16,17 situations 91:1 91:2 size 50:9,13,19 54:21 56:24 57:7 73:20,22 74:5,12,19,25 75:6,13,17,21 87:17 94:4,14 95:20 98:14,19 192:14 210:24
--	---	--	--

[size - stationary]

211:7 sizes 55:7 skill 16:10 17:16 34:20,23 35:1,6,22 36:8 36:8 41:22,24 45:12 52:1 55:12 69:8 98:3 100:12 103:11 126:5 126:12 127:13 128:3,5 132:17 136:3 142:13 149:13 150:11 150:14,17,21 151:17 154:22 157:20 162:5 skilled 127:18 slow 5:10 small 201:12,21 smaller 175:24 192:6 smallest 192:3 211:7 smooth 38:16 39:2 52:8 55:20 smoothed 54:3 54:10,13 55:8 56:2 57:19,23 208:22 209:7 smoothing 55:7 208:23,24 209:1	snippet 97:12 solid 163:10 solutions 216:23 solve 205:19 solving 205:14 soon 90:11 sorry 21:12 25:14 41:23 42:25 55:8 67:1 87:17 88:20 89:19 92:14 99:15 102:5 105:13 106:16 113:1 117:1 123:11 128:2 135:12 135:16 145:2 148:3 158:6 173:7 179:20 189:5 190:3 191:2 194:1 203:4 209:14 211:22 212:12 sources 16:19 16:22 south 2:15 space 38:22 39:4 47:25 91:12 153:17 160:12 163:2 163:15 speaking 77:5 84:22,24 85:2 90:15 106:14	132:16 special 47:11 114:20,24 specific 6:19 16:1 37:10,12 40:3,6,11 118:8 160:15 160:20 199:13 specifically 73:16 specification 51:11 60:15 75:16 specifications 73:13,20 specs 110:14 spelling 66:21 spend 11:11 spent 11:15,20 12:10,17,19,21 12:22 13:2,4,7 spline 208:24 stabilization 200:2,6,16 201:8,9 202:16 203:10 204:5 204:24 205:1 205:21 stabilizing 200:20 203:3 stamped 10:15 10:22 11:4 stand 92:3 186:23 187:10 187:12	standing 90:8 start 5:1 155:1 157:22 186:2 started 14:10 14:14 172:9 starting 74:17 84:19,20 112:8 146:14 193:15 195:18 starts 90:5,11 90:12 97:6 196:12 state 1:22 4:10 37:4 121:13 stated 41:5 147:25 173:23 statement 110:1,8,11 186:23 187:10 187:12,15,16 187:17 statements 151:5 states 1:1 50:1 50:9 54:1,8 55:4 59:4 77:24 79:15 111:24 115:22 116:5 180:23 186:20 213:14 stating 69:1 77:9 123:6 128:10 stationary 90:24
--	--	--	---

[stay - taken]

stay 57:17 61:5 158:21 staying 159:9 190:17 stays 94:25 stenographic 215:9 stenographic... 215:5 step 44:15 88:10,16 104:22 106:19 107:2 159:25 159:25 175:4 steps 66:21 106:5 175:5,5 177:5,9 181:1 stimm 3:13 stitch 124:9,13 128:25 129:4,4 129:9,14 212:23 213:3 213:11 stitching 116:23 124:20 132:4 stop 77:2 84:22 90:3,3,8 91:22 106:13 stopped 93:13 196:10 stops 97:5,7 stored 124:8 128:22,24 129:13 212:22	storing 117:24 124:6 212:15 straight 109:3 152:7 street 2:15 stretch 201:4 strike 25:14 41:23 142:12 190:3 submitted 7:3 subscribed 218:14 substance 5:19 49:4 substantive 108:18 successive 124:10 129:1 129:15 212:24 suggest 85:13 suggested 64:21 suggesting 25:20 70:2 123:6 suite 1:13 sullivan 2:14 sunday 5:22 6:7 supplemental 3:16 9:25 10:5 11:3 15:3 17:11 18:21,23 24:5,6 66:25 67:7 186:19	187:2,3 196:17 197:2 support 18:23 27:13 28:19 29:9,19,24 31:16 73:13 156:9 173:24 supported 57:13 supporting 30:21 sure 5:13 9:18 16:22 33:24 37:20 48:22 54:24 79:22 84:9 106:23 115:7 129:19 136:8 138:7 142:11 145:17 170:23 176:16 176:18 186:17 187:12 195:8 207:9 209:23 switch 187:22 sworn 4:4 218:14 system 56:23 57:6,21 59:19 60:7 61:1,15 61:21 62:4,10 62:11,21 64:13 64:14 65:9 74:14,17 76:6 76:19,19 78:1 80:10,11,18,22	80:22 81:10 98:18 109:1 138:18 139:12 141:9 160:18 161:17,18 163:16,17 systeming 78:10 systems 161:19 162:21 163:14
			t
			t 217:3,3 t1 70:5,24 t2 70:6 t3 70:6 tab 9:23,23,24 10:6 tablet 145:20 take 45:17 48:15,20 97:3 97:12 109:21 129:7 132:19 143:15 149:2 196:21 199:1 206:12 208:8 209:19,22 210:5,15 taken 1:20 48:23 101:16 108:13 138:19 138:21 139:15 139:17 141:10 141:17,20 143:19 152:3 202:13

[takes - think]

takes 40:13 100:16 205:21 talk 73:21 75:21 95:16 134:20 163:7 178:4 187:8 195:12 209:23 talked 161:13 194:23 talking 15:25 40:2,3,5 48:7 51:10,11 52:8 61:6 72:22 73:17,19 81:16 81:18,21 82:10 83:4,16 84:3 86:8 95:13,15 97:24 103:23 117:3 123:3 131:9 133:15 137:4 139:19 154:24 162:2 163:9 164:13 165:3 179:4 190:19,20 199:25 200:1 200:14,16,21 203:5,22,23 206:15 talks 52:10 53:3 114:11 139:23,23 140:12 teaches 150:1	teaching 65:24 213:20 technical 8:7 30:19 31:12 127:22 163:21 telephone 132:25 133:4,6 tell 18:12 20:15 20:19 33:12 34:8,11 35:16 35:17,20 67:6 81:20 82:13 83:14 86:3 97:22 155:19 157:21 177:19 184:8,9 telling 68:21 81:8 155:21,23 157:12,14 159:2 tells 68:1 ten 4:21 183:15 term 15:4 35:22 36:9 63:2 64:4,24 67:19 72:16,16 72:20,23 100:3 126:5,11 164:8 206:19 terminals 145:20 terms 14:22 15:5,22 16:4 16:21 17:2 21:2,13 22:6	23:14,20 24:8 24:20 25:6,12 26:3,4,25 34:2 80:8 100:3 125:15 156:24 157:16 165:9 168:11 207:10 207:11,12 211:2 testified 4:4 156:15,18 172:23 testify 4:16 testimony 3:3 41:5 49:4 108:19 125:4 151:20,21,22 216:9,17 218:8 text 141:1,2 thank 32:22 49:2 88:5 108:17 130:24 138:25 143:23 167:16 211:19 213:25 thanks 142:21 thereto 145:22 thing 43:8 90:20 130:2,3 142:3,5 190:8 200:15 207:1 213:18 things 4:25 38:17 47:16 98:6 130:6	132:12 136:18 139:9 151:4 162:22 163:13 163:20 165:12 171:21 175:6 177:24 180:24 181:1 205:7 206:14 207:6 think 6:11 10:3 14:1,2 17:10 21:24 23:8,22 24:9,21 25:4,8 25:14,15 27:10 30:9,25 31:9 34:13,19 40:8 40:10,12 41:20 47:9 62:8 64:3 67:21 68:10,18 70:22 71:9 72:13 76:23 77:17 83:2 86:13,24,25 89:15 94:18,21 96:20 101:3 104:9 106:18 108:11 110:14 116:18 120:4 121:16 122:2 127:4,5 129:1 130:6,12 134:13 138:15 148:11 149:20 150:14,17,19 152:13,19,25 153:14 155:14
---	---	---	--

[think - transformation]

155:24 156:6,9 156:18,25 157:25 161:23 162:15 165:22 170:2,14 177:15,21 178:1 179:10 179:12,14 185:11 208:18 209:18 210:12 211:17,17 212:1 thinks 16:13 third 190:15,17 thomason 3:18 115:7,10,17,23 116:2,14 118:4 119:12,19 121:16 122:7 123:8 125:19 125:22 128:4,6 128:7 130:11 131:21 132:20 133:3,16,24 134:16 135:5 140:20 141:1,2 142:7,23 211:12,14 thought 142:16 152:22 177:17 three 9:22 47:25 132:10 153:2,22,23 154:9,24 161:2 163:5,11 164:1	164:12,20 166:22 167:5 167:12 168:4 169:1,14 170:8 173:2 189:18 190:6 191:10 191:23 192:3 203:13 tilt 46:10 47:8 47:11 48:3,4,8 92:9 114:6,13 114:19,22,24 116:8 128:14 146:25 147:14 148:6,10,15 208:21,25 209:6 210:19 210:21 tilted 45:24 46:9,15,18 138:10 tilting 47:7,20 47:21 time 1:16 11:10 11:15 12:16,18 12:20,22 16:10 32:16 35:1 37:5 38:18 45:11 65:14 69:10 70:5,6 70:24 75:3,7 75:14,22,24 76:24 77:18 78:4,7,11,14,16 79:11 80:12,15	81:8 85:24 87:8 88:3,8 89:14,21,22,23 90:1 92:7,13 92:23,25 93:1 93:10,11,20 94:5,9,15 95:1 95:5,10 97:4 98:16 108:12 134:17 159:10 167:9 172:13 216:18 timeframe 216:8 times 4:19 63:6 64:10,11,21,25 65:2 67:4,15 68:7 70:1,22 71:5,14,20 72:25 73:8 74:6 75:4 93:1 94:12 170:24 171:4 172:5,11 172:24 title 115:9 today 4:14,17 5:16 8:20 19:3 19:13 30:24 31:6,20 32:1 32:18 33:12 34:11 35:21 36:7 86:19 151:20 164:18 167:4,10 173:3 173:9 211:21	today's 6:10 together 116:23 124:9 124:13,21 128:25 129:4,9 129:14 212:23 213:3,11 told 125:24 156:20 160:1 160:15,23 169:9 179:23 186:25 tone 84:18,21 tons 30:13 top 4:20 13:6 13:18 37:1 38:24 66:5 123:17 138:11 165:17 topics 86:15 total 13:10 touch 46:24 towards 158:20 208:18,19 track 47:15 trademark 1:1 transcript 215:7,8 216:6 216:19 218:5,8 transform 95:25 transformation 112:14,16 113:12 205:9
--	---	---	---

[transformations - used]

transformatio... 146:25	twenty 11:16	16:23 18:8	158:23 159:2
translating 91:13	two 7:3,8 17:19	29:10 33:5,13	159:16 160:8
translation 92:10 93:6	88:10 91:11	34:12 36:9	160:10,21
146:18 147:11	132:10 169:25	39:25 45:13,19	178:23 210:22
147:12 153:20	179:5,6 191:25	47:5,20 51:20	211:3 212:7
205:13	200:3 202:9	62:9 64:20	understands 156:15,19
translational 147:6 199:13	203:6 204:24	65:5 69:4	understood 15:19 65:12
199:15 205:2	205:5,5 206:13	70:23 71:12	76:3 79:23
205:18	207:6	72:13 73:5	89:16 157:20
translations 205:6	type 36:19	77:8,15 81:25	213:24
trial 1:3	37:19,20 40:10	90:13 95:17	unfortunately 174:11
true 83:19	206:8 212:25	100:12 101:14	united 1:1
123:7 138:22	typed 7:25 8:11	101:17,21	unpack 64:22
142:18 215:9	8:22	102:7 103:15	74:3 75:20
218:8	types 16:24	104:6 106:23	136:19
truth 125:13	37:8,14,17	110:11,12	unrelated 200:3
truthfully 4:17	40:1,9	127:14 136:18	unused 194:4
try 46:16	typically 213:24	137:10,16,17	194:19 195:15
162:23 175:21	u	142:13 145:4	197:9
trying 9:5	u.s. 1:4 216:4	149:13 150:22	urquhart 2:14
16:25 47:4	217:1 218:1	152:16 154:8	use 10:11 39:20
65:5 81:25	uh 27:7 61:17	154:23 155:8,9	52:23 53:4
90:14 95:17,24	63:1 71:3	155:16,17,20	66:1 67:19
96:2 97:14	105:9 106:7,7	157:1,13 162:6	83:21 116:21
126:23 135:19	107:20 109:12	186:14 190:23	138:17 139:12
160:19 167:8	134:4 136:23	194:8 202:10	141:8 198:14
167:15 177:1	145:23 153:10	understanding 16:8 20:8,13	201:5 206:25
202:5	155:4 161:8	26:19 35:1,7	207:9
turn 144:11	under 4:13	35:21 41:25	used 21:2 24:7
174:7 188:19	11:23 13:8,11	51:25 62:23	30:21 33:7
	34:25	69:7 99:23	36:21 37:24,25
	understand 4:13 5:3,6,7	103:25 109:9	
	15:10,16 16:9	136:4,9 155:12	
		157:22 158:18	

[used - viewing]

38:3,10 39:5,9 39:16,21 48:2 89:10 118:15 119:12 121:13 124:9 125:8 128:24 129:13 130:21 132:4 137:11 153:17 154:3 161:17 172:16 185:21 206:8,9 207:4 209:1 212:23 216:19 user 133:11,13 138:19 139:14 141:9,16 198:4 uses 98:24 105:23 199:20 206:19 using 27:15 28:8 29:18 40:10 50:17 92:11,12 108:5 120:14,18 124:12 125:1 129:2,21,23,24 130:11 133:3 139:8 141:3 165:16,18 186:11 200:8 208:22 213:1	vague 17:3 37:16 69:11,16 76:25 96:19 values 50:17 variable 66:18 72:6,6 98:9,10 98:11,12 various 131:20 131:25 208:25 varying 64:20 verbal 5:5 verify 53:20 216:9 veritext 1:11 216:14,23 veritext.com 216:15 versus 33:6,25 34:3 36:2 vertical 122:19 126:2 127:8,17 127:20,20 128:14 130:2 132:15 138:22 141:22 vibrations 38:25 video 17:20,23 41:7,12 42:4,6 42:8,10,11,12 42:13,14,17,20 42:21 43:17 45:5,9,25 46:6 46:16 63:6 64:25 67:5,15	68:7 70:1 71:15,20 72:25 73:9 74:1 88:11 95:6 97:12 98:5,6,8 99:11,17 107:24 115:13 115:19,21 139:14 140:1 140:21 141:14 141:25 142:1,4 142:6,12,14,16 142:19 198:4 210:20 212:8 212:16 213:13 213:16,17 videos 115:24 116:1 view 25:2,9,10 26:3 39:11 42:10,16 44:9 45:7 46:23 59:21,23,24 60:2,10,12 61:23,25 62:2 66:11,17 76:8 76:11,13,17 80:20 89:3 93:16 101:25 113:25 129:10 130:14 198:23 207:23 208:3 viewable 100:17 101:16 101:25 102:10	viewed 72:17 viewing 43:23 44:3,7,8,17,20 44:22 50:9,13 50:19 54:2,9 54:13,22 56:24 57:7 58:5,8,9 58:12,13,20 59:5,12,20,22 59:24 60:9,12 61:2,16,18,22 61:25 62:1,12 62:12 63:3,5 64:4,25 65:1 66:10,12,15 67:3,4,13,14 68:6,24 69:6,9 69:24,25 71:14 71:19,22 72:24 73:8,14 74:5 74:15,18,20 75:1,6,13,23 76:8,10,12,17 78:2,7,9,15 79:5 80:1,15 80:19 81:11 82:1,18 83:11 85:23 87:7,19 87:24 88:7,17 88:22 89:1,2 89:11,14,19 94:3,14 95:14 95:16,19,20 96:11,11,12,13 96:17 98:13,19
v			
v 216:4 217:1 218:1			

[viewing - wide]

104:24 105:2,4 105:11,14,22 105:24,25 106:21 107:4,9 107:12,13,16 107:21 108:2,4 113:25 114:4 203:25 204:7 206:17,19 213:5,10,22 vision 1:4 216:4 217:1 218:1 visual 43:23 44:4,9,16,17,19 44:21,23,25 50:20 52:21 57:1,9 59:8,21 59:23,25 60:1 60:10 61:23 62:1,2,3,13 63:3 66:11 72:17 76:9,11 76:13,14 78:3 80:20,21 88:17 88:23,24 89:3 99:11,18,24 100:3,10,13,16 101:1,6,6,11,18 101:20,21,22 102:9,10 103:4 103:16,18,23 103:25 104:6 104:14,15,24 104:25 105:2,4	105:5,7,12,13 105:17,19,20 105:21 106:1,8 106:9,20,22 107:3,4,9,10,11 107:14,16,17 107:18,23,25 108:1,6,7 109:2,4,5,7 112:13 113:24 114:1 voss 3:20 187:24 188:17 189:10,12 192:21 193:4 193:10 197:3 197:13,19 vs 1:6 w wait 29:12,12 29:13 84:18 92:15,15,16,16 171:5,5,6 208:16 walk 49:23 want 10:11 29:14 34:16 35:12 36:7 43:2,4,7,9 75:10 85:12 86:12,23 143:15 150:25 151:2 152:4,7 156:7 158:17 159:6,22,24	160:14,22 161:21 163:21 165:10 166:17 168:16 169:23 173:4,19 181:19 183:19 184:24 193:12 195:5 201:5 207:8 watanabe 3:19 144:3,8 145:23 146:1,9,14 147:5,13 148:5 148:7,21 149:7 149:23,24 150:1,5,10 151:12,13,14 163:25 164:2,4 164:6,9,11,19 165:3,8,10,15 165:17,20 166:2,5,21 167:4,11,21,23 168:3,25 169:14 170:7 170:21 171:1 171:20 172:1,6 172:11,14,16 172:21,24 173:1,10 174:10,11,25 175:12,16 176:17 177:25 178:9 180:13 180:23 182:7	182:10,19 183:1,10,23,24 184:3,11,14,18 184:25 185:1,4 185:15 186:1 186:10,15,16 186:18,20 watanabe's 165:8 way 9:6 13:13 29:7,11 41:20 62:9 63:17,20 68:11,19 69:7 77:24 78:22 91:25 103:19 105:10 107:6 130:5 134:24 140:15 142:18 142:20 154:19 160:21 161:20 166:24 176:23 177:12 179:22 183:25 191:6 196:7 202:23 210:23 week 6:6 179:5 179:6 welcome 49:1 108:16 143:22 went 106:18,19 white 207:19 207:22 wide 38:10 39:10,18,22 40:16,23 41:6
--	--	---	--

[wide - work]

41:11,15 willing 151:24 161:25 window 43:23 44:3,7,8,17,20 44:22 50:10,13 50:19 54:2,13 54:22 56:24 57:7 58:5,8,9 58:12,13,21 59:5,13,20,22 59:24 60:10,12 61:3,16,19,23 61:25 62:1,12 62:12 63:3,5 64:5,25 65:1 66:10,13,15 67:3,4,13,15 68:7,24 69:6 69:10,24,25 71:14,20,22 72:17,24 73:8 73:14 74:5,15 74:18,20 75:1 75:6,13,23 76:8,10,12,18 78:2,7,10,16 79:5 80:1,6,15 80:19 82:18 83:11 85:23 87:7,19,24 88:8,17,22 89:1,2,11,14,18 89:19 94:3,14 94:25 95:14,16	95:19,20 96:11 96:12,12,13,17 98:13,19 104:24 105:3,5 105:11,14,22 105:24,25 106:21 107:4,9 107:12,13,16 107:21 108:2,4 113:25 114:4 204:1,8 206:17 206:20 213:10 213:22 window's 82:1 windows 54:9 81:11 213:5 wings 38:25 wisdom 16:13 withdraw 43:7 83:8 173:8 witness 4:3,5 5:13,18,21 6:13,20 7:19 8:3,14,25 9:10 10:17 11:19,25 12:8 14:1 17:5 18:20 20:3,15 20:25 21:10,24 22:24 23:13 24:2 25:22 26:12 28:13 29:1,13,16 30:6 31:5 35:9 36:11 37:18 39:13 41:1,14	43:1,6,11 45:15 48:22 49:10 51:17 53:12 54:6 63:24 69:20 71:17 73:11 76:1 77:7,20 78:20 79:22 80:5 81:15 82:22 83:14 85:7,9 86:2 87:11,22 91:6 92:19,22 94:7 94:18 96:20 100:1,7 101:10 102:13,19 103:6,18 104:9 104:20 106:15 110:3 111:5 117:1 118:22 119:22 120:12 123:24 130:24 137:3,15 146:1 147:17 149:18 156:13 157:9 158:6,20 161:5 162:9 165:6 166:13 168:8 169:5 171:7,13 171:15 173:13 176:8 178:4 179:12 181:9 182:5 183:14 184:18 185:19 188:5 192:5	194:13 201:2 201:24 202:21 203:15 206:22 210:1 212:10 213:8 214:1 216:8,10,12,18 word 15:12 45:15 46:5 51:4,23 55:24 56:12 57:19,23 61:11 66:1,2 68:7 70:14,17 77:8 92:11 96:2,20 98:24 99:4,6 103:18 105:23 125:19 129:17,18 130:21 132:8 145:5 175:2 179:17 180:7 195:11,21 197:25 198:14 198:15,24 200:11 201:5 202:6,12 206:25 wording 21:4 206:5 words 15:10 21:2 23:6 93:9 94:11 100:20 108:5 126:1 207:3 work 14:8,10 14:15
--	--	--	--

[worked - zoomed]

worked 12:14 36:23 213:8,19	100:24 102:5,6 103:13 105:23	50:10,14,17,17 50:19,24 51:1
working 12:12 14:10,12,14 17:20,23 90:4 175:18 211:6	108:3 111:12 116:16,16 131:9,19 132:8 134:2 137:3	51:8,13 52:2,9 52:10,21,24,24 53:4 55:5,5,9 56:2 57:1,5,9
written 8:15	140:14 143:17	zoomed 55:8
wrong 26:19 49:20 94:22	143:18 145:8 145:16 148:9	56:2
x	151:11 153:18	
x 3:1 161:9,13 xy 60:3 76:4,17 78:2,11,12	154:8 163:10 176:8 185:3,8 187:21 189:1,9 190:2,23 191:7	
y	192:1 193:15	
y 161:11,13 yaw 153:7,8,24 155:15,17 156:5,7,19,24 157:21 158:9 158:25 161:1 163:5,8,23 166:4 173:2 205:22	193:18 194:14 194:22 195:5 195:12 196:9 196:23,23 197:5 198:20 200:12 208:18 208:20	
yeah 29:16 37:4 42:24 47:4,19 48:14 48:17,19,19 50:15 57:11,17 60:17,19 63:7 63:10,22 64:1 64:9 68:4 73:3 74:8 75:15 79:14 92:22 99:21 100:24	year 14:16 172:9 years 17:19,22 yep 36:20 yesterday 6:8 yli 2:8 yuan 2:4 yunan 2:4	
	z	
	z 154:5,6 zero 161:21 zoom 5:21 6:5 6:8 49:13 50:2	