

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,

Petitioner,

v.

AUTONOMOUS DEVICES, LLC,

Patent Owner,

Case: IPR2024-00745

Patent No. 11,633,474

VIDEOTAPED DEPOSITION OF DR. ELI SABER

APPEARING REMOTELY

April 4, 2025

9:30 a.m.

Reported by: Eileen Mulvenna, CSR/RMR/CRR/RDR

DIGITAL EVIDENCE GROUP

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1 REMOTE VIDEOTAPED DEPOSITION of
2 DR. ELI SABER,
3 a declarant the above-titled action, held on Friday,
4 April 4, 2025, commencing at approximately
5 9:30 a.m., before Eileen Mulvenna, CSR/RMR/CRR/RDR,
6 Certified Shorthand Reporter, Registered Merit
7 Reporter, Certified Realtime Reporter, Registered
8 Diplomate Reporter, and Notary Public of the State
9 of New York.

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1 A P P E A R A N C E S:

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1 A P P E A R A N C E S (Continued):

2

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Page 5

1 I N D E X

2 WITNESS EXAMINATION BY PAGE

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4 DR. ELI SABER

5 MR. COLVIN 6

6

7 E X H I B I T S

8 PAGE

9

10 Paper 14 No Bates numbers, Motion to 7

11 Amend

12 Exhibit 1001 Bates No. TESLA 1001, '474 6

13 Patent

14 Exhibit 1005 Bates No. TESLA 1005, 7

15 Buibas

16 Exhibit 2001 No Bates Numbers, 6

17 Declaration of Dr. Eli

18 Saber, Ph.D.

19 Exhibit 2004 No Bates Numbers, File 65

20 History of '991

21

22

1 DR. ELI SABER,

2 having been duly sworn by Eileen Mulvenna,

3 a Notary Public of the State of New York,

4 was examined and testified as follows:

5 EXAMINATION

6 BY MR. COLVIN:

7 Q. Good morning, Dr. Saber.

8 A. Good morning. And give me a minute,
9 I'm still downloading the documents.

10 Q. Sure.

11 MR. COLVIN: So I'll just put on the
12 record, I've uploaded exhibits from IPR
13 No. 2024-00745, IPR for the '474 patent.

14 And I have uploaded Exhibit 2001,
15 which is your declaration, sir.

16 (Exhibit 2001, No Bates Numbers,
17 Declaration of Dr. Eli Saber, Ph.D., received
18 and marked.)

19 MR. COLVIN: And also uploaded Tesla
20 1001, which is the '474 patent.

21 (Exhibit 1001, Bates No. TESLA 1001,
22 '474 Patent, received and marked.)

Page 7

1 MR. COLVIN: Exhibit 1005, which is
2 the Buibas reference.

3 (Exhibit 1005, Bates No. TESLA 1005,
4 Buibas, received and marked.)

5 MR. COLVIN: And paper 14, which is
6 the motion to amend.

7 (Paper 14, No Bates numbers, Motion to
8 Amend, received and marked.)

9 THE WITNESS: Yes, on my end, I have
10 four exhibits that I have received from you.

11 MR. COLVIN: Great.

12 BY MR. COLVIN:

13 Q. Okay. Just some administrative stuff
14 up front, any reason you cannot tell the full truth
15 today, sir?

16 A. No.

17 Q. Again, I'll -- like the last few times
18 we've done this, I'll try to take a break about
19 every hour. If you need a break before then, let me
20 know. Just no breaks while the question is pending.

21 So I've uploaded these four electronic
22 documents. Do you have any hard copies with you,

1 sir?

2 A. Yes, I do. Counsel has sent two
3 binders of exhibits that are here open in front of
4 me. They're clean binders that arrived a few days
5 ago.

6 Q. Okay. And you don't have any notes in
7 front of you; do you, sir?

8 A. No, I do not.

9 Q. Any way to electronically communicate
10 with counsel during the deposition?

11 A. No.

12 Q. Other than the Zoom, I guess.

13 A. Other than the Zoom, I don't have -- I
14 don't have any kind of communication here besides
15 the Zoom. I don't have -- my cell phone is not in
16 the room. I don't have an iWatch on or anything.

17 Q. Okay. So you can look at whatever you
18 want, any of these exhibits to answer questions.
19 All I ask is that if you're looking at something,
20 you let me know what you're looking at. Okay?

21 A. Absolutely, be more than happy to.

22 Q. And if we need to share something on

Page 9

1 the screen so that we can make sure that we're
2 looking at the same thing, let me know. Happy to do
3 that. And there may be some instances where I do
4 that anyway.

5 All right. Well, let's get into it
6 then. I'd like to start with contingent claim 85 in
7 the motion to amend. And if you will open the
8 paper 14, patent owner's contingent motion to amend.
9 And then turn to the back to Appendix A.

10 And let me know when you're there,
11 sir.

12 A. I have a page number for Appendix A --
13 hold on.

14 Q. Well, it's page 1 of Appendix A. So
15 the page number isn't going to be very helpful to
16 you.

17 A. I see that. So it's Claim 85, which
18 is substitute to Claim 45 if 45 is found
19 unpatentable. That's the page; correct?

20 Q. That's it, yes, sir.

21 A. Okay.

22 Q. And the reason I -- I know that you

1 have -- you have Claim 85 in your declaration, but
2 this Claim 85 has all of the elements numbered. And
3 so I think it's just a little easier for us to keep
4 track of what we're talking about here as we go
5 through the different elements of this claim.

6 A. Yes.

7 Q. That's why I've taken you to this
8 page.

9 A. Yeah, that's fine. It's in my
10 declaration anyway.

11 Q. Correct, yeah.

12 Okay. So you have studied this
13 Claim 85; is that right?

14 A. That's correct.

15 Q. And you understand what Claim 85
16 means?

17 A. That's correct.

18 Q. And one of the things that you did in
19 your declaration was identify where the elements of
20 Claim 85 had support in the original underlying
21 application; right?

22 A. That is correct.

1 Q. So let's start with the 85 pre. So
2 it's just the preamble to Claim 85, it mentions a
3 first device. And then the claim goes on to mention
4 a second device and a third device.

5 You understand that; right?

6 A. Yes, it does mention a second device,
7 and then it's in additional stuff -- yes.

8 Q. What do you view as the difference
9 between a first device, a second device, and a
10 third device?

11 A. I don't understand what you're asking.
12 Different devices, first, second, and third.

13 Q. So first, second, and third are all
14 different devices; right?

15 A. Presumably so, yes.

16 Q. If we look at Element 85.1, you see it
17 starts with a knowledgebase?

18 A. Yes, sir.

19 Q. What is a knowledgebase?

20 A. Well, there is a description in the
21 patent about that.

22 Q. What's your understanding of a base,

1 knowledgebase, sir?

2 A. So if you look at the patent, I'm
3 looking at Exhibit 1001 that you have given me. And
4 if you look at the patent right in the abstract,
5 you'll see there is the word "knowledgebase."

6 Do you see that, sir?

7 Q. I do.

8 A. Just give me one moment. Let me just
9 adjust my PDF here.

10 So if you look at that first -- just
11 in the abstract, do you see where it says storing
12 this knowledge in a knowledgebase, like the fourth,
13 fifth line down in the abstract?

14 Q. I do see that.

15 A. And you see where it says, i.e.,
16 neural network graph sequences, et cetera.

17 Q. I do.

18 A. So that's essentially a description of
19 the knowledgebase. We can search for other support
20 in the patent, as well.

21 Q. So are all graphs knowledgebases?

22 MR. JAIRAM: Objection, form.

1 THE WITNESS: Well, that's a very hard
2 and big question to answer. "All" is
3 always -- it depends on the context, it
4 depends on the content, it depends on how
5 it's designed. I can't answer that without
6 seeing the specifics of what exactly a
7 knowledgebase -- words have meaning in terms
8 of context, as you understand.

9 BY MR. COLVIN:

10 Q. Right. Right.

11 So in the context of the '474 patent,
12 what's your understanding of a knowledgebase?

13 A. Well, I can give you a good
14 description. If you go to Column 8 of the patent,
15 and I'm on line -- starting on line 12.

16 Do you see that, sir?

17 Q. I do.

18 A. So you see where it says,
19 The knowledgebase may include a neural network, a
20 graph, a collection of sequences, a sequence, a
21 collection of knowledge cells, et cetera, et cetera.

22 In further embodiments, the plurality

1 of collection of object representations correlated
2 with instructions, include a user's knowledge,
3 style, et cetera, et cetera.

4 So there's a -- I would say, a very
5 decent description of knowledgebase in the patent.
6 And then there's, I'm sure, other places in the
7 patent. It's a pretty long patent.

8 Q. Are all neural nets knowledgebases?

9 A. And, again, you keep asking that "all"
10 clause, and I keep mentioning to you it's context
11 dependent. So it depends on -- I would need to see
12 what the neural network looks like, how is it
13 designed, what's the context of that design, what
14 are the neurons, what's the info.

15 I mean, I have to see what the
16 structure is to be able to answer that question in
17 the context of how it's designed.

18 Q. Okay. Well, you just pointed me to a
19 line, sir, that said the knowledgebase may include a
20 neural network, a graph, a collection of sequences,
21 and it goes on.

22 A. Right.

1 Q. And so, in this context, let me just
2 take graph, can you give me an example of a graph
3 that is a knowledgebase and then give me an example
4 of a graph that is not a knowledgebase?

5 A. Well, it's hard to do that on the fly.
6 But, I mean, obviously, as you understand, a graph
7 has a structure kind of like a neural network, where
8 there are potentially nodes in the graph that are
9 interconnected with either weights or maybe weights
10 and probabilities.

11 And some of those nodes may connect
12 feedback to themselves or point to other knowledge,
13 and there usually is, like, matrix transformations
14 that kind of transfer from node to node type of
15 stuff.

16 So these type of graphs would contain
17 information about whatever that you are training on
18 or, you know, utilizing to model as graphs.

19 Q. So what about that graph that you just
20 described makes it a knowledgebase?

21 MR. JAIRAM: Objection, form.

22 THE WITNESS: Well, I mean, is this

1 something that is relevant to my declaration
2 that you are asking about? Is there
3 something in the declaration that you are
4 asking about, sir?

5 BY MR. COLVIN:

6 Q. What about the graph that you just
7 described makes it a knowledgebase?

8 MR. JAIRAM: Same objection.

9 THE WITNESS: Again, my opinions are
10 in my declaration, as you have in front of
11 you. Is there something specific that you're
12 asking about with regards to my declaration?
13 Because I've given you the description of
14 knowledgebase from the patent that we -- you
15 know, as a general description that we've
16 been discussing.

17 BY MR. COLVIN:

18 Q. Sir, you opine on the amended claims
19 in your declaration. You've told me that you
20 understand them. I'm asking you about a term from
21 the claim. You've pointed me to the specification
22 of the patent that describes the knowledgebase as

1 including a graph. I'm asking you about that. You
2 haven't give me an answer, which I know you're going
3 to disagree with. So let me try again.

4 What about a graph that you described
5 makes it a knowledgebase compared to a graph that
6 would not be a knowledgebase?

7 MR. JAIRAM: Objection, form.

8 THE WITNESS: Again, your question is
9 very general. And it's hard to do that
10 without seeing the specifics of what the
11 graph is designed, how was it designed,
12 what's the context of the graph.

13 So without knowing the specifics and
14 without seeing specifics, it's hard to answer
15 these type of hypothetical open-ended type of
16 questions.

17 BY MR. COLVIN:

18 Q. Sure. Yeah, I'm going to ask you some
19 hard questions today. This is hopefully just the
20 first of many. Let me ask you this, then, about the
21 graph.

22 Are you unable, sitting here right

1 now, to tell me the difference between a graph that
2 is a knowledgebase and a graph that is not a
3 knowledgebase?

4 MR. JAIRAM: Objection, form.

5 THE WITNESS: I'm not able to do that.

6 I would just need to see the specifics of
7 what you are asking in general. I've
8 described to you, generally speaking, what a
9 graph would look like, but I have to see what
10 the specifics are.

11 So your question needs to be more
12 specific of what graph exactly you're looking
13 at so we can take a look at the details and
14 discuss. We'd have to analyze that. I
15 walked through the specification where the
16 word "knowledgebase" is described in the
17 specification and has support in the
18 specification.

19 BY MR. COLVIN:

20 Q. So nothing in your answer there made a
21 distinction between a graph that is a knowledgebase
22 and is not a knowledgebase. So I am taking that to

1 mean that you either cannot or you will not or
2 you're unable to draw a distinction between a graph
3 that is a knowledgebase and is not a knowledgebase.

4 A. I think I've answered your question,
5 sir, but I'm happy to do it again. So until I see
6 the specifics of -- you know, if you put a graph in
7 front of me and say the specifics of that, I would
8 have to analyze that, and I can tell you whether it
9 is or it isn't a knowledgebase once you have a
10 chance to analyze it.

11 It's hard to answer on the fly, oh,
12 it's a graph, a knowledgebase. Just open-ended
13 questions are hard to answer in a deposition without
14 seeing the specifics and the context of how they are
15 designed and structured.

16 Q. Are you aware of a graph that's not a
17 knowledgebase?

18 MR. JAIRAM: Objection, form.

19 THE WITNESS: Again, I think -- I
20 would have to see the specifics to be able to
21 answer that in the context of what is being
22 designed and proposed.

1 BY MR. COLVIN:

2 Q. In your history, in the history of
3 your life, as an expert in this field, a proposed
4 expert in this field, are you aware of any graph
5 that is not a knowledgebase?

6 MR. JAIRAM: Objection, form.

7 THE WITNESS: I mean, I've had a
8 pretty long career. I have developed a lot
9 of things in my career. Again, I would need
10 to see the specifics of what a graph looks
11 like, what is the details of it looks like,
12 what are the specifics, what's the context of
13 the design, how is it designed and
14 architected, to able to answer those
15 questions. And what type of information is
16 described in the graph.

17 BY MR. COLVIN:

18 Q. So you're unfamiliar with the
19 specifics of any graph that is not a knowledgebase?

20 MR. JAIRAM: Objection, form.

21 THE WITNESS: I didn't say that. What
22 I said is I'm not here to answer questions on

Page 21

1 the fly that I haven't opined on specifically
2 in my declaration. I would need to see the
3 specifics of the graph that you are
4 proposing, what's the context of the graph,
5 how is it designed, what are the inputs, what
6 are the outputs, what's contained in the
7 nodes of the graph, you know, how the
8 connections between them are handled. I
9 would need to see the details to be able to
10 answer those kind of questions.

11 BY MR. COLVIN:

12 Q. Because to you the details would
13 matter and make a difference if the graph is a
14 knowledgebase or is not a knowledgebase; is that
15 right?

16 A. Well, the details would make a
17 difference in the context of what's being described
18 and analyzed and modeled, you know, what information
19 is contained in the nodes, how the connections are
20 done, is it probabilities or weights, what are the
21 details.

22 I mean, open-ended questions like that

1 are very difficult to answer without seeing the
2 details and the specification of these details.

3 Q. So how about a neural net? Are you
4 aware of any neural net that's not a knowledgebase?

5 MR. JAIRAM: Objection to form.

6 THE WITNESS: Well, again, I would
7 have to see the specifics of what your neural
8 net looks like, what is the design, how is it
9 trained, what is the information about it,
10 what's the inputs, what's the outputs.

11 You know, it's very difficult to
12 answer questions on the fly, and I don't
13 believe I opine on that in my declaration
14 specifically with regards to a knowledgebase.
15 Is there something specific from the
16 declaration that you are asking about?

17 BY MR. COLVIN:

18 Q. Are you aware of any neural net that
19 is not a knowledgebase, yes or no?

20 MR. JAIRAM: Objection, form.

21 THE WITNESS: I think I have addressed
22 this question a few times. I'm more than

1 happy to address it again.

2 So, again, I would need to see the
3 specifics of what the neural net is, how is
4 it designed, what are the specifics of it,
5 what's contained in the neurons, what the
6 activation functions are, what the
7 connectivities is, to be able to opine on
8 such a structure.

9 BY MR. COLVIN:

10 Q. Could you imagine a neural net that is
11 not a knowledgebase?

12 MR. JAIRAM: Objection, form.

13 THE WITNESS: I mean, as I've answered
14 to you already, I would need to see the
15 specifics of the neural net, how is it
16 designed, what the knowledge that's contained
17 in that network is, how is it proposed to be.
18 You know, the details are important to answer
19 these questions, sir.

20 BY MR. COLVIN:

21 Q. In all of the studying that you've
22 done for this case, have you seen a neural net

1 that's not a knowledgebase?

2 MR. JAIRAM: Objection, form.

3 THE WITNESS: I believe I have
4 answered your question multiple times, but
5 I'm more than happy to answer again.

6 So I would need to see the specifics
7 of what the neural network is to be able to
8 opine on the details. So you would have to
9 give me a neural network specifics. I would
10 have to look at it, see the inputs, see the
11 outputs, analyze it.

12 And then I'm happy to opine what the
13 neural network exactly is doing and what kind
14 of knowledge is contained in that neural
15 network. Neural networks have different
16 levels of knowledge.

17 BY MR. COLVIN:

18 Q. There's different types of neural
19 networks. You'll give me that; right?

20 A. Yes, of course.

21 Q. And in your work for this case, you've
22 come across many different neural networks

1 described; right?

2 A. Well, specific to this case, I've come
3 across the neural networks that are described in
4 this case with regards to the patent and the prior
5 art.

6 Q. Right. And you've studied those;
7 right?

8 A. Yes, I have.

9 Q. Are you aware of any neural network
10 that you've come across in this case that is not a
11 knowledgebase?

12 MR. JAIRAM: Objection, form.

13 THE WITNESS: I think, again, I would
14 want to see specifically what you're asking
15 about so we can discuss the details
16 specifically. Is there something in my
17 declaration that I've opined on that you're
18 asking about? What specifically are you
19 asking about?

20 BY MR. COLVIN:

21 Q. Okay. Let me give you one more
22 chance, sir. Identify for me a neural network that

1 is not a knowledgebase.

2 MR. JAIRAM: Objection, form.

3 THE WITNESS: I think, as I mentioned
4 to you multiple times, and I'm more than
5 happy to answer the question again, my
6 opinions are in my declaration. I provided
7 opinions in the declaration with regards to
8 the patent, the prior art, the motion to
9 amend.

10 Is there something specific in the
11 declaration that you're asking about? I
12 think the specifics are -- and the devil is
13 always in the detail, and the specifics are a
14 very important part of that.

15 BY MR. COLVIN:

16 Q. Right. But you've already said that
17 you have studied the neural networks that are in
18 this case, and so having studied the neural networks
19 in this case, you are now unable to identify a
20 single neural network that is not a knowledgebase;
21 is that where we're at?

22 MR. JAIRAM: Objection, form.

1 THE WITNESS: I think, sir, you are
2 misrepresenting my testimony, and you are
3 twisting it around inappropriately. What
4 I've said to you is my opinions are in my
5 declaration.

6 I have provided opinions with regards
7 to Claim 56 and 57 and the motion to amend,
8 as you are well aware. And those opinions
9 are -- and the details and why the specifics
10 of that are provided in the declaration.

11 Is there something specifically about
12 the declaration that you are asking about?

13 We can jump into that those details.

14 BY MR. COLVIN:

15 Q. Sir, I'm asking you about the neural
16 networks that you've studied for this case. I've
17 asked you repeated now to identify for me any neural
18 networks, not only in this case, but that you are
19 aware of in your career, in your entire experience
20 in working with neural networks.

21 And you have been unable to identify
22 for me a single neural network that is a

1 knowledgebase. I'm going to give you one more
2 opportunity to fix that if what I've just said is
3 incorrect.

4 MR. JAIRAM: Objection, form.

5 THE WITNESS: I think what you have
6 said is incorrect. What I've said to you is
7 I would need to see the specifics of a given
8 neural network to be able to opine on the
9 level of knowledge and what the knowledge
10 contained in that neural network is. So I
11 would need time to analyze that and provide
12 it.

13 And I've also said to you multiple
14 times that my opinions are in my declaration.
15 Is there something specific from the
16 declaration that you are asking about that
17 I'm happy to opine on?

18 BY MR. COLVIN:

19 Q. Okay. I think we've got your position
20 on that, sir.

21 What does it mean for an input to be
22 correlated with an instruction set?

1 A. So, for instance, if you look at the
2 patent itself on Column 7, lines roughly 12, 13 to,
3 say, 20.

4 Q. Okay.

5 A. You see there it talks about object
6 representations correlated with one or more
7 instruction sets for operating a device are included
8 in a neuron, a node, a vertex, or an element of a
9 knowledgebase.

10 So you have some correlation, some --
11 in that sense, connectivity in a sense between the
12 inputs and the instruction sets. They have some
13 type of correlation.

14 Q. Does "correlation" mean connectivity
15 then?

16 A. Well, I'm not basically -- I'm just
17 saying correlation. It just requires -- you know, a
18 correlation is -- I'm not sure how to describe it in
19 English other than it's some type of, you know,
20 correlation. It's correlating the inputs.

21 So there is representation in a sense
22 or perhaps like a mutual relationship or connection

1 between two -- let's say, two entities. So I have
2 entity one and entity two, and there's some things
3 between them that are mutual relationship or mutual
4 representation.

5 I mean, those words kind of describe a
6 little bit, but correlation is kind of like a
7 well-known concept in signal processing and
8 technical -- in the technical field.

9 Q. Is there a difference in your mind,
10 and in the context of the claim here, where inputs
11 are correlated with instruction sets? Is there a
12 difference in your mind between a direct correlation
13 and an indirect correlation between an input and an
14 instruction set?

15 MR. JAIRAM: Objection, form.

16 THE WITNESS: Well, I would have to
17 see the specifics to describe that detail.
18 And, again, I would ask, is there something
19 specific about my declaration that you are
20 asking about?

21 BY MR. COLVIN:

22 Q. Oh, it's the claim language, sir.

1 Yes.

2 You understand there could be a
3 difference between inputs that are directly
4 correlated with an instruction set, and inputs that
5 are indirectly correlated with an instruction set?

6 MR. JAIRAM: Objection, form.

7 THE WITNESS: Generally speaking, yes.

8 But, again, I would need to see the details
9 and the specifics to be able to discuss
10 specifically what you're talking about.

11 And, again, I would ask you, is there
12 a paragraph, a part on my declaration that
13 you're asking about specifically? Because my
14 opinions are in my declaration.

15 BY MR. COLVIN:

16 Q. So since, generally speaking, you can
17 understand that there's a difference between inputs
18 that are directly correlated and indirectly
19 correlated with instruction sets, what is the
20 difference between an instruction set that is
21 indirectly correlated with an input and one that is
22 directly correlated?

1 MR. JAIRAM: Objection, form.

2 THE WITNESS: I don't believe I
3 provided opinions on that directly in my
4 declaration. So is there something specific
5 that you are asking about in the declaration
6 that I provided opinions on?

7 I did provide opinions. So I'm
8 looking at the declaration, ground 1A,
9 paragraph -- starting at paragraph 62. And
10 starting at that paragraph, I've provided
11 opinions about that particular wherein and
12 where is that described or opinions and with
13 regards to prior art.

14 Is there something specific about that
15 that you are asking about?

16 BY MR. COLVIN:

17 Q. I'm just trying to get your
18 understanding of the claim language, sir. You've
19 told me that you understand what the claim means,
20 and so I'm probing that a little bit, which I'm
21 entitled to do.

22 And so back to my question about

1 direct and indirect correlation, what would be the
2 difference between a direct and an indirect
3 correlation, speaking of inputs and instruction
4 sets?

5 MR. JAIRAM: Objection, form.

6 THE WITNESS: Well, if you look at the
7 claim language, like I'm looking at Claim 56
8 from my declaration, I'm on paragraph 61, you
9 see where it says, wherein the one or more
10 inputs are further correlated with another
11 one or more instruction sets for operating a
12 third device?

13 The word "direct" or "indirect" is not
14 in that claim language. It's just about
15 further cor- -- you have inputs that are
16 further correlated with instruction sets.

17 BY MR. COLVIN:

18 Q. And so because the word "direct" or
19 "indirect" is not in the claim language, is it true
20 that both a direct and an indirect correlation would
21 meet this claim?

22 MR. JAIRAM: Objection, form.

1 THE WITNESS: Well, I would have to
2 see -- I would have to see specifically what
3 you are asking about. Again, you are asking
4 general open-ended questions.

5 I have provided opinions specifically
6 about Buibas in this particular claim in this
7 section on ground 1A and where Buibas does
8 not meet the claim language. And that's what
9 I'm here to talk about today, is my opinions
10 that are in my declaration.

11 BY MR. COLVIN:

12 Q. A direct correlation between an input
13 and an instruction set would meet the claim; right?

14 MR. JAIRAM: Objection, form.

15 THE WITNESS: The claim language says
16 are further correlated. So you have a
17 correlation. They're further correlated with
18 another one or more instruction sets. That's
19 what the claim language is talking about.
20 And I've described that with regards to the
21 prior art in ground 1A.

22 Is there something specific about that

1 that you're asking?

2 BY MR. COLVIN:

3 Q. Yeah, turn back to Element 85.1 in the
4 motion to amend. It's the first big element in that
5 claim.

6 A. Yes, yes.

7 Q. So you see there it says, one or more
8 inputs are correlated with one or more instruction
9 sets?

10 You see that?

11 A. Correct. And that's the same sentence
12 in a sense to Claim 56 except 56 has the word
13 "further correlated with another" --

14 Q. Right.

15 A. So there are a couple of minor
16 differences, but yes.

17 Q. Yeah, so your previous answer was kind
18 of focused on that "further correlated" bit, and I
19 don't want to talk about that right now. I just
20 want to talk about the -- where it says, one or more
21 inputs are correlated with an instruction set.
22 Okay?

1 And you would agree with me, I think,
2 that one or more inputs that are directly correlated
3 with one or more instruction sets would meet this
4 little claim element; right?

5 A. As I mentioned to you, sir, already,
6 my opinions are in my declaration. Is there
7 something specific about those opinions that you're
8 asking about? You know, the claim language says,
9 are correlated with one or more instruction sets for
10 operating a second device.

11 So if they're correlated with
12 instruction sets for operating a second device, that
13 would meet the claim language. Now, is there
14 something specific about my declaration that you're
15 asking about?

16 Q. Could an indirect correlation between
17 the inputs and the instruction sets meet the claim
18 language?

19 MR. JAIRAM: Objection, form.

20 THE WITNESS: I would have to see the
21 specifics of what you are asking about,
22 again, because you're asking open-ended

1 language. I would need to see the specifics.

2 The devil is always in the details.

3 So I would need to see the specifics to be
4 able to answer direct questions.

5 BY MR. COLVIN:

6 Q. Okay.

7 A. Is there something in my declaration
8 that you're asking about?

9 Q. So sitting here today, you're just not
10 sure if an indirect correlation between inputs and
11 instruction sets would meet the claim language?

12 MR. JAIRAM: Objection, form.

13 THE WITNESS: I think you're
14 misrepresenting my testimony and obviously
15 twisting it around. What I've said to you is
16 I would need to see the specifics of what
17 exactly is being correlated and how it's
18 being correlated to be able to answer
19 specific questions about it.

20 I mean, I have provided opinions in my
21 declaration with regard to grounds 1A. Those
22 opinions start on paragraph 61. And I'm more

1 than happy to go through those. Is there
2 something specific in the declaration that
3 you are asking about?

4 BY MR. COLVIN:

5 Q. Let's go to Figure 17 in the patent.

6 A. The patent, Figure 17. Yes, what
7 about the figure?

8 Q. What's your understanding of what
9 model A shows in Figure 17?

10 A. Do you see, if you look at the patent,
11 page -- Column 56, line 40, it says, basically,
12 Figure 17 illustrates various artificial
13 intelligence methods, systems, and/or models that
14 can be utilized in DCADO Unit 100 embodiments.

15 Q. Does model A in Figure 17 show a
16 representation of a neural network?

17 A. Well, if you look at the patent
18 Column 103, starting at line 40, it discusses
19 Figure 17. And starting on line 56, it talks about
20 model A.

21 Q. Does model A in Figure 17 show a
22 representation of a neural network?

1 A. Well, if you'll look at the disclosure
2 I just pointed you to, Column 103, starting on
3 lines 56, you see it says, "In one example shown in
4 Model A, the disclosed artificially intelligent
5 devices, systems, and methods for learning and/or
6 using a device's circumstances for autonomous device
7 operation may include a neural network (also
8 referred to as artificial neural network)."

9 And it continues from there
10 describing, you know, some of the details. But,
11 again, is there something specific in my declaration
12 that you are asking about? I don't believe I
13 provided opinions in the declaration about model A.

14 Q. Does model A in Figure 17 show a
15 representation of a neural network?

16 MR. JAIRAM: Objection, form.

17 THE WITNESS: If you continue reading
18 on Column 103, starting at line 60, you see
19 it talks about, includes a network of
20 Nodes 852, which is obviously labeled in
21 model A, also referred to as neurons and
22 Connections 853, which is also labeled in

1 model A, similar to that of a brain. And
2 then Node 852 can store data, object, data
3 structures, et cetera.

4 So it describes basically model A.
5 And if you go to Column 104, lines starting
6 at line 10, it talks about the
7 Connection 853.

8 So it's describing basically -- I
9 mean, obviously, model A is the generic
10 illustration, but it's describing a neural
11 network with nodes and connections. It's a
12 generic illustration.

13 But, again, is there something
14 specific of my declaration that you are
15 asking about? I don't believe I provided
16 opinions about model A in the declaration.

17 BY MR. COLVIN:

18 Q. So you would agree that model A is a
19 generic description or depiction of a neural network
20 with nodes and connections; right?

21 MR. JAIRAM: Objection, form.

22 THE WITNESS: Well, I mean, obviously

1 it's a generic general illustration, but
2 there's a -- the details of that description
3 and the specifics start -- the description of
4 Figure 17 start on Column 103, and those --
5 that figure is described, Column 103, 104,
6 et cetera.

7 So the specifics are in the
8 specification. So you would need to read the
9 specifics carefully to be able to provide
10 specific details about what's being
11 described.

12 BY MR. COLVIN:

13 Q. I can't tell if you agree with me or
14 don't agree with me that model A shows a generic
15 depiction of a neural network?

16 MR. JAIRAM: Objection, form.

17 THE WITNESS: I think I mentioned that
18 to you already. So --

19 BY MR. COLVIN:

20 Q. Okay. Well, does model A in Figure 17
21 generically describe a neural network or not?

22 MR. JAIRAM: Objection, form.

1 THE WITNESS: I think I've already
2 answered that question, but I'm more than
3 happy to answer it again. So if you look at
4 Column 103 starting on lines 56, it
5 describes -- it says, In one example shown in
6 Model A, it's disclosing an artificially
7 intelligent device, system, et cetera.

8 Then it talks about specifics about
9 model A. It talks about Nodes 852, which is
10 labeled in model A. And it talks about
11 Connections 853, which is also labeled in
12 model A.

13 And then later on in line 67, it talks
14 about the Node 852. And then in Column 104,
15 lines 10, 11, it's talking about the
16 connection 853 in that particular model.

17 So, essentially, model A, at a high
18 level, is illustrating -- is providing
19 illustration of a neural network, but the
20 details and the specifics you would have to
21 read the specification carefully with regards
22 to Figure 17. So it's not just a generic,

1 you know, thing.

2 BY MR. COLVIN:

3 Q. Could the network shown in model A of
4 Figure 17 be a representation of input nodes
5 connected to output nodes?

6 MR. JAIRAM: Objection, form.

7 THE WITNESS: Well, I mean, it's an
8 illustration. I mean, you could look at it
9 as the nodes on the left are potentially
10 input nodes and the nodes on the right are
11 potentially output nodes, but you'd have to
12 read the specifics to see exactly what's
13 being described.

14 And I don't believe I opined on that
15 in my declaration specifically. Is there
16 something specific in the declaration that
17 you are asking about?

18 BY MR. COLVIN:

19 Q. Could the input nodes on the left of
20 model A be correlated to output nodes on the right
21 that are instruction sets? Would model A be an
22 example -- let me -- that was a bad question. Let

1 me start over.

2 With respect to model A in Figure 17,
3 could that be an example of input nodes correlated
4 to instruction sets where the instruction sets are
5 the output nodes on the right?

6 A. I'm not sure I understand what you're
7 asking. I mean, like I said to you in my prior
8 testimony, my opinions are in my declaration. Is
9 there something specific about the declaration that
10 you're asking about? I did not opine on a model A
11 in my declaration at this time.

12 Q. Okay. So it's your opinion that none
13 of your opinions in your declaration are based on
14 model A of Figure 17?

15 A. I don't believe I have opined on
16 model A in my declaration.

17 Q. Okay.

18 A. And the only time model A is mentioned
19 in the declaration is with regards to the support
20 for the motion to amend. So I did not provide
21 specific opinions about model A in the declaration.
22 Is there something specific about my opinions that

1 you're asking about?

2 Q. You do not rely on model A of
3 Figure 17 for any opinion you provide in your
4 declaration; true?

5 A. Well, I obviously have studied the
6 '474 patent. I have studied the prior art that was
7 mentioned -- cited in the petition. And I provided
8 opinions that are specific with regards to Claim 56
9 and 57. Is there something specific about that that
10 you're asking about?

11 Q. That's not my question, sir. My
12 question is different and very specific.

13 Isn't it true that you do not rely on
14 model A in Figure 17 for any opinion in this case?

15 A. I'm not sure I understand your
16 question exactly. I have studied the '474. So I
17 looked at the entire patent when I was rendering my
18 opinions with regards to Claim 56 and 57. So
19 model A is part of the specification.

20 So when I studied the patent, I
21 studied the patent, not just one page of it. So I
22 studied the patent, and I've studied the claims that

1 I was asked to render opinions about. And I've
2 rendered opinions on those specific claims with
3 regards to the prior art in response to the petition
4 that was filed.

5 Is there something specific about
6 those opinions that you're asking about?

7 Q. Does model A inform any of your
8 opinions that the patent describes input neurons
9 correlated with instruction sets?

10 A. Well, the '474 specification obviously
11 informs your opinions about -- when you read the
12 claim, and you -- as I've been told multiple times
13 and as I've done this many times, you read the
14 claims in light of the specification that's
15 described where the specification describes the
16 details that the claim is claiming. So you read the
17 claims in light of the specification.

18 So in this case, I've rendered
19 opinions on Claims 56 and 57. Is there something
20 specific about those opinions? And that's what I'm
21 here to talk about. Is there something specific
22 about those opinions that you're asking about? I

1 haven't rendered opinions about anything outside of
2 those claims at this time.

3 Q. Does model A in Figure 17 provide
4 written description support for input neurons being
5 correlated with instruction sets?

6 A. Sir, I'm not an attorney. So I'm not
7 going to get into the language of various things
8 that attorneys use. I have provided you details
9 from the specification where Figure 17 is described.
10 And there's a long description about Figure 17 in
11 the specification that I would invite you to look at
12 carefully with regards to model A and the other
13 models that are in the figure. So there is specific
14 information there about it in the specification.

15 Q. And so are you relying on Figure 17 to
16 provide support for the claim limitations that
17 require input neurons being correlated with
18 instruction sets?

19 A. I believe I have answered that
20 question already, but I'm more than happy to answer
21 it again.

22 Q. Yes or no? We have to establish a

1 baseline whether you're even doing this or not.

2 So does Figure 17 provide support for
3 the claim limitations that require input neurons be
4 correlated with instruction sets?

5 A. I have answered your question multiple
6 times, but I'm happy to do it again.

7 Q. Okay. Yes or no?

8 A. As I mentioned to you, I have studied
9 the claims that I've rendered opinions on with
10 regard -- well, with regards to the petition and the
11 prior art and studied the specification of the '474
12 patent, as I'm rendering my opinions.

13 My opinions are in my declaration, and
14 that's what I'm here to talk about. Is there
15 something specific about those opinions that you are
16 asking about? Is there a paragraph in the
17 declaration that you are asking about specifically?
18 Because my opinions are there in that declaration.

19 Q. Sir, are you really unable to confirm
20 for me in this deposition whether or not you used
21 Figure 17 to support your opinion that input neurons
22 are correlated with instruction sets?

1 A. I don't believe -- I think you're
2 misrepresenting my testimony. As I --

3 Q. Yeah, I don't think I am. So correct
4 me if I am.

5 A. Let me -- let me -- with all due
6 respect, let me do correct you. As I mentioned to
7 you already, and I'm happy to answer it again, I
8 have studied the '474 specification very careful. I
9 have studied the claims that I'm -- that I'm
10 rendering opinions on in my declaration.

11 And I've rendered those opinions with
12 regards to those claims and the prior art. And when
13 I read those claims, I read those in light,
14 obviously, of the specification. Is there something
15 specific about my declaration that you are asking
16 about? Because the opinions are there.

17 Q. Are you able to tell me, sitting here
18 right now, where model A includes input neurons that
19 are correlated with instruction sets?

20 A. I believe I've already answered your
21 question, but --

22 Q. You have not.

1 A. I mean, obviously, as I pointed you to
2 the specification on Figure 17, starting on
3 Column 103, there's a description of model A there
4 and the neural network that it represents and the
5 nodes and -- et cetera.

6 Is there something specific about the
7 declaration that you are asking about?

8 Q. Okay. I just want to tell you in
9 advance, I'm going to quote this language that
10 you're going to answer to this question to the PTAB.
11 And so I don't want there to be any surprise about
12 this when you come back later and say that I didn't
13 give you a fair shot.

14 So just so the patent trial and appeal
15 board understands your opinion, does model A in
16 Figure 17 describe input neurons correlated with
17 instruction sets or not?

18 A. I believe I've answered this question
19 multiple times, but I'm more than happy to do it
20 again for you. There is a description in the
21 specification -- and I'm happy to do this for the
22 PTAB, and you're welcome to quote it.

1 There is a description in the
2 specification about Figure 17 and the neural network
3 that it sets up and the inputs and correlated -- any
4 inputs and the outputs description there in that --
5 starting at Column 103, lines 40, and then goes into
6 Column 104. There is a specific description about
7 the details here.

8 I didn't opine specifically on
9 Figure 17 in my declaration. So I've opined on the
10 claims in my declaration, 56 and 57. Is there
11 something specific about those opinions that you are
12 asking about?

13 Q. Can you point me to any language in
14 the specification of the '474 patent that describes
15 input neurons correlated with instruction sets with
16 regard to Figure 17?

17 A. I mean, there's a big description
18 about Figure 17 in the specification, as I mentioned
19 to you. So we can walk through that description if
20 you want.

21 Q. I just want you to point me to where
22 it describes a correlation between input neurons and

1 instruction sets.

2 A. Well, it's describing the figure
3 itself, obviously, starting on line 40 of
4 Column 103. So it talks about the neural network,
5 the nodes, the connections between them, which
6 obviously implies connectivity between inputs and
7 the outputs.

8 But, again, as I said to you already,
9 I have provided opinions with regards to Claims 56
10 and 57 in my -- is there something specific about my
11 declaration that you are asking about? I don't
12 believe I provided opinions on Figure 17
13 specifically in my declaration, with exception for
14 the motion to amend support where that's mentioned,
15 obviously.

16 Q. Yeah, we're talking about the motion
17 to amend, sir. We're looking at a claim that is in
18 the motion to amend.

19 So that's part of your declaration;
20 right?

21 A. Yes, but what I pointed you there to
22 is the support with regards to the additional

1 language that's being placed into the claim -- you
2 know, in Claim 85. So as you can see in Claim 85,
3 there is additional language starting on 85.8, 85.9,
4 et cetera, that's being added into the claim to
5 transform it from Claim 45 to Claim 85.

6 And the support for that language is
7 multiple pages that you see in my declaration where
8 that support for that amendment is established.

9 Q. Okay. Let's look at -- sorry, give me
10 just a minute.

11 MR. COLVIN: Actually, we've been
12 going for an hour now. Let's take a break.

13 THE WITNESS: Sounds good. I will be
14 back on my desk at 10:40. Is that okay?

15 MR. COLVIN: That works for me.

16 Madam court reporter, is that okay
17 with you?

18 THE REPORTER: Yes.

19 THE WITNESS: All right. 10:40.

20 THE REPORTER: We're off the record.

21 (Recess taken from 10:29 a.m. until
22 10:40 a.m.)

1 THE REPORTER: We're back on the
2 record.

3 BY MR. COLVIN:

4 Q. Dr. Saber, did you talk to counsel
5 over the break?

6 A. No, I have not.

7 Q. Did you talk to anybody over break?

8 A. Nope, I have not.

9 Q. I want to keep asking you about the
10 motion -- the claims of the motion to amend. And in
11 particular, I want to jump down to Element 85.8.

12 A. 85.8.

13 Q. And that says, "wherein the
14 knowledgebase includes a neural network, wherein the
15 one or more inputs are one or more input neurons of
16 the neural network."

17 A. 85.8, right, or --

18 Q. Correct.

19 A. Yes.

20 Q. Okay. So with that in mind, just so
21 we can tell that that's 85.8, I want you to turn in
22 your declaration to page 164.

1 A. Yes, sir.

2 Q. Okay. Starting on page 164, you --
3 are you there, sir?

4 A. I am.

5 Q. Okay. Starting on page 164, you
6 provide your opinions about where the claim
7 limitations are supported in the applications that
8 led to the '474 patent; is that right?

9 A. That is correct. So you see at the
10 top of page, it says, Support from original U.S.
11 application for the '474 patent.

12 Q. Okay. Now, in the middle of page 164,
13 you excerpt -- you know, you include a picture of
14 Figure 17; right?

15 A. That is correct.

16 Q. And then just below that Figure 17, in
17 parentheses, you say, "Model A showing input
18 nodes/neurons correlated using downstream
19 connections with output nodes/neurons that
20 include/product instruction sets for operating a
21 device"; right?

22 A. You read that correctly from

1 Application -- '991 Application at Figure 17.

2 Q. So you analyzed model A of Figure 17
3 for your opinions in this case; right, sir?

4 A. As I mentioned to you, I've read
5 through the entire '474 specification and obviously
6 these applications. And I've rendered opinions with
7 regards to the motion to amend support, as you see
8 here in those pages, as well as opinions with
9 regards to Claim 56 and 57, specifically in light
10 of -- with regards to the prior art.

11 Q. So looking at what you wrote here
12 about model A and Figure 17, you agree that model A
13 in Figure 17 shows input neurons correlated with
14 instruction sets; right?

15 A. I mean, generally, that's the idea,
16 yes. That's the generic idea. But the devil is
17 always in the details of what is -- you know, for
18 instance, if you pick up a neural network from a
19 prior art A and you put that in front of me, I would
20 have to see what is being discussed there and how
21 that neural network is derived, set up, specified,
22 et cetera, to answer the questions about that.

1 But the application here is talking
2 about -- or this '474 and its prior applications is
3 talking about correlating inputs with instruction
4 sets, that's correct.

5 Q. And with respect to model A, the
6 inputs would be on the left side, and the
7 instruction sets would be on the right side; is that
8 right?

9 A. Well, obviously, model A is an
10 illustration, but that's typically the case with
11 neural networks. Yeah, you have inputs on the left
12 side. You notice the arrows positioning -- you
13 know, moving from left to right.

14 So, generically speaking, in a neural
15 network, your inputs typically are on the left, and
16 the outputs are on the right.

17 Q. All right. And in this case, the
18 outputs could be instruction sets; right?

19 A. That's generically speaking, yes.
20 But, I mean, the devil is in the detail of what
21 exactly you're asking about. But generally
22 speaking, yes, the outputs could be instruction

1 sets.

2 Q. Is model A a representation of what's
3 known as a feed forward neural net?

4 MR. JAIRAM: Objection, form.

5 THE WITNESS: I mean, generically
6 speaking, obviously yes, but the devil is in
7 the details. But you obviously see the
8 arrows going from left to right. So you have
9 a feed forward type of network.

10 But, again, I would have to see the
11 details of a given network to tell you. But
12 generically speaking, model A looks like a
13 feed forward network.

14 BY MR. COLVIN:

15 Q. Now, the words that you've put in
16 parentheses here below Figure 17 that I read
17 earlier, starting with model A showing input
18 nodes/neurons, those are your words, not words from
19 the '991 application; right?

20 A. I don't recall exactly where -- if
21 those words were part of the specification. I don't
22 recall off the top of my head at this point. But

1 those words describe what's going on. But I don't
2 recall whether they're exactly copy and paste from
3 somewhere or whether they were specifically written.
4 I don't remember off the top of my head. I would
5 have to see the 911 -- '991 application specifically
6 and search that to be able to answer that question.

7 Q. What is the best description in the
8 '991 -- let me rephrase that.

9 Where is the best description written
10 down in the '991 of the output nodes of a neural
11 network being instruction sets?

12 MR. JAIRAM: Objection to form.

13 THE WITNESS: I don't remember off the
14 top of my head. I would have to see the '991
15 application. So you would have to upload
16 that, and we would have to sit and search it.
17 Off the top of my head, I couldn't tell you.
18 And I don't have that in front of me.

19 BY MR. COLVIN:

20 Q. Well, let me -- let me have you turn
21 to page 191 -- 190 and 191 of your declaration.
22 Let's do that.

1 So the claim element that you are
2 analyzing here is Claim Element 85.13. And you see
3 on page 1 and 90, it starts, wherein the determining
4 one or more instruction sets, and it goes on.

5 And then if you look at page 191 in
6 your left-hand column there, and this is at the end
7 of that claim element, it says, correlation between
8 the one or more input neurons and the one or more
9 instruction sets operating the second device.

10 Do you see that?

11 A. Yes. So you're reading the words in
12 the left column of the claim language itself;
13 correct?

14 Q. Yeah, that's right. That's right.
15 And the point of me doing that is just to T up the
16 discussion that this claim element describes -- or
17 requires a correlation between input neurons and one
18 or more instruction sets for operating a second
19 device.

20 You agree with that; right?

21 MR. JAIRAM: Objection to form.

22 THE WITNESS: I didn't understand your

1 question.

2 BY MR. COLVIN:

3 Q. You agree that the claim language of
4 Element 85.13 requires a correlation between one or
5 more input neurons and the one or more instruction
6 sets for operating the second device; right?

7 A. Well, the claim -- I mean, let's just
8 be specific about the claim language. The section
9 that you read, it says, and using a correlation
10 between the one or more input neurons and the one or
11 more instruction sets for operating the second
12 device. So using a correlation between the one or
13 more input neurons and the one or more instruction
14 sets.

15 Q. Okay. So do you agree with me that
16 that claim element needs to be supported by the '991
17 application; right?

18 A. That --

19 MR. JAIRAM: Objection to form.

20 THE WITNESS: So the support for these
21 amendments is in the declaration. You see
22 the next series of pages that go from 191 to

1 roughly 200 provides support for that
2 particular language.

3 BY MR. COLVIN:

4 Q. Okay. What is the best support in the
5 '991 application for the idea that input neurons are
6 correlated with instruction sets for operating a
7 second device?

8 MR. JAIRAM: Objection, form.

9 THE WITNESS: Well, all -- all the
10 stuff that you see on page 191 to 200
11 provides that support.

12 BY MR. COLVIN:

13 Q. What is the best support?

14 A. I mean, they all provide the support.
15 Essentially, that's the best support, is all those
16 pages.

17 Q. Can you point me to any language in
18 the '991 application that you have cited here that
19 describes a correlation between input neurons and
20 one or more instruction sets for operating a second
21 device?

22 MR. JAIRAM: Objection to form.

1 THE WITNESS: So if you look, for
2 instance, on page 192, below Figure 17, we
3 provide model A showing input nodes/neurons
4 correlated, et cetera.

5 BY MR. COLVIN:

6 Q. So let's -- since you brought that up,
7 I want to pause there for a second. I will re-T
8 that question up to you and let you continue going
9 where you're going.

10 But what you just pointed to -- the
11 language you just pointed to, model A showing input
12 nodes/neurons, that's your language. That's not
13 language from the '991 application; right?

14 A. As I mentioned to you earlier, I don't
15 exactly remember whether that sentence is there or
16 not. I would need to see the '991 application to
17 search that. But that's a description that a
18 POSITA, a person of ordinary skill in the art, would
19 come to when you're reading the specification of the
20 '474 and the '991.

21 Q. Okay.

22 MR. JAIRAM: Could I ask, Matt, if

1 you're going to ask questions about the '991
2 application, would it be possible -- I can't
3 remember if it's -- I think it's an exhibit.
4 Would it be possible for you to provide an
5 electronic copy of that to Dr. Saber to refer
6 to.

7 MR. COLVIN: Yes, I can do that. But
8 I'm -- I'm interested in what he has cited
9 here, and so I don't think it's necessary to
10 go look at other things that he hasn't cited.
11 The things that he is supporting -- he says
12 supports are cited here.

13 THE WITNESS: But I do would like to
14 see the '991 application exhibit so I can
15 take a look at the entire exhibit to refresh.

16 BY MR. COLVIN:

17 Q. Okay. Just a second, I'll upload it.
18 So I have it saved in -- the entire file history of
19 the '991, I have saved in two parts because the
20 files are so large. I'll upload them. Okay. The
21 first part is being uploaded now. This is
22 Exhibit 2004.

1 (Exhibit 2004, No Bates Numbers, File
2 History of '991, received and marked.)

3 BY MR. COLVIN:

4 Q. The second part is going to be the
5 part you're interested in because it has the full
6 language of the specification, but I'm just sending
7 you both parts of the exhibit for completeness.

8 Okay. Both parts of Exhibit 2004 have
9 been uploaded to you, sir. And these 2004 is the
10 file history for the '991 application. And I think
11 what you're going to be looking for starts on PDF
12 page 5 of part 2 of Exhibit 2004. And the
13 specification continues all the way through the
14 claims and the figures that were there.

15 A. So I have part 2 open. Now, is this
16 an image or a searchable document?

17 Q. It's just the document, sir. I don't
18 know what you mean by "image." There's a bunch of
19 words there.

20 A. Well, that's not a searchable
21 document. So it would be very difficult -- I mean,
22 it's a large document, obviously. It would be very

1 difficult to try to go through the document to
2 search -- I would have to OCR the document first to
3 be able to search and find things.

4 Q. Well, I'm not requiring you to search.
5 I'm just asking you questions about things that you
6 wrote in your declaration. Okay. So maybe let's go
7 back to your declaration. And now that you have
8 Exhibit 2004, maybe you'll be able to answer those
9 questions.

10 So going back to page 192 of your
11 declaration -- tell me when you're there.

12 A. Okay.

13 Q. Below the picture of Figure 17, you
14 have a parenthetical. And this parenthetical is
15 where you say, Model A shows input neurons
16 correlated with instruction sets; right?

17 A. That is correct.

18 Q. And is there anywhere else that you
19 have cited for the '991 application that you believe
20 describes input neurons correlated with instruction
21 sets; and if so, point me to that language?

22 A. Well, obviously, when you read through

1 the citations that we provided on page 192, 193,
2 194, 195, 196, 197, all the way to page 200, a
3 person of ordinary skill in the art reading that
4 would come to that understanding, that you have
5 these input neurons that are correlated with
6 instruction sets based on the descriptions that we
7 have cited to -- that I have cited to there.

8 Q. Show me the best written description
9 in the '991 application that you have cited to that
10 describes input neurons that are correlated to
11 instruction sets for operating a second device.

12 A. It's page 192 to page 200. I mean, I
13 don't understand what you're asking me. If you read
14 those citations -- you know, you're looking for a
15 single sentence or word that describes that, and
16 that's not how specifications work.

17 You have to read -- you know,
18 otherwise, we would just write the whole
19 specification in one sentence and be done. That's
20 not how it works. So you have the citations there
21 that describe technically what is going on in this
22 particular figure that's being described and why the

1 amendment is being made.

2 Q. So I've asked you a couple of times
3 now to point me to where the '991 specification that
4 you've cited identifies input neurons correlated
5 with instruction sets. You have pointed me
6 specifically to what you wrote in the middle of
7 page 192.

8 Is there anything else that you have
9 cited that you believe specifically identifies input
10 neurons correlated with instruction sets?

11 A. I think I've already answered your
12 question, but I'm happy to answer it again. The
13 citations I provided you are citations from an
14 entire specification. So if the specification is
15 200 pages, I picked up the best citations, right,
16 the citations that describe this particular
17 amendment that we are -- that's being proposed.

18 So those citations are the best
19 citations to describe what's being proposed for
20 amendment. Those are -- those pages are it,
21 describe what's being proposed. There's obviously
22 additional details in the -- in the '991

1 application, but those are -- those citations
2 describe the best support for that particular
3 amendment.

4 Q. You understand that your opinion here
5 is determining if the '991 application has written
6 description support for the claim elements that you
7 analyzed?

8 A. I mean, I'm not an attorney, but what
9 I'm describing to you is the amendment that's being
10 proposed, here's the support in the specification --
11 whether it's the '991 or whatever, here's the
12 support in the specification for why this amendment
13 is being proposed for this particular claim.

14 So the support is discussed on those
15 pages described to you, and it's mostly quotations
16 from the specification, with minor explanations here
17 and there. But it's mostly text that's being lifted
18 or quoted specifically from the specifications with
19 citations to where that text came from.

20 Q. What standard did you use to render
21 your opinion that the cited portion of the
22 specifications constitute written description

1 support?

2 MR. JAIRAM: Objection, calls for a
3 legal conclusion.

4 THE WITNESS: Oh, I'm not sure what
5 you're asking. So as I said to you, I'm not
6 an attorney. I'm providing -- I'm reading
7 the language of the claim, plain ordinary
8 meaning of that language of the claim that's
9 being amended, and looking at the
10 specification to provide support for that
11 particular language where that is in the
12 specification. And that's --

13 BY MR. COLVIN:

14 Q. So you -- I'm sorry, go ahead. I
15 didn't mean to cut you off.

16 A. So that's what's being proposed or
17 provided here in this declaration. The support that
18 you see there is the support from the specification,
19 where the language of the claim applying plain and
20 ordinary meaning from the eyes of a POSITA in light
21 of the specification.

22 Q. Sir, you understand the meaning of the

1 claim terms -- the plain and ordinary meaning of the
2 claim terms; right?

3 A. Yes, I do. I mean, as I explained to
4 you, I've read the claim terms -- whichever element
5 you're referring to, I've read the claim terms from
6 the eyes of a POSITA and looked at the specification
7 for support for those amended claim terms, and the
8 support is provided in those pages.

9 MR. JAIRAM: If I could pause one
10 second. There's a person on the Zoom I'm not
11 familiar with. I just want to make sure that
12 person is an authorized person. I don't
13 believe that person is a counsel of record.
14 Can you --

15 MR. COLVIN: Yeah, he's with us,
16 Arvind.

17 MR. JAIRAM: Is he with the party or
18 with your law firm?

19 MR. COLVIN: He's with Fish.

20 BY MR. COLVIN:

21 Q. Dr. Saber, since you understand the
22 plain and ordinary meaning of the claim terms, what

1 is the plain and ordinary meaning of neurons
2 correlated with instruction sets?

3 A. I think I've already answered that to
4 you before; right? I think I've already answered
5 that to you before. I mean, correlated, like we
6 described earlier, is where you have like a mutual
7 relationship or -- you know, but the word
8 "correlation" is not -- you know, it's not like it's
9 one-to-one synonymous, but you're essentially
10 correlating the inputs with the instruction sets.
11 So there is some type of a mutual relationship
12 connectivity between them.

13 Q. So correlated -- the plain and
14 ordinary meaning of "correlated" means mutual
15 relationship connectivity?

16 A. I'm not providing a construction here.
17 I'm just trying to explain to you that there is a --
18 there is a correlation between the inputs and the
19 instruction sets. So the plain and ordinary meaning
20 of the word "correlation" is understood in the
21 technical -- in a technical art.

22 Q. As what?

1 A. There is some type of mutual
2 representation, mutual relationship connectivity,
3 but correlation is -- it's not exactly one of those
4 words, but there is some kind of a connectivity,
5 there is a mutual representation or mutual
6 relationship between the inputs and directly, you
7 know, correlated with the outputs or the instruction
8 sets. I'm sorry.

9 Q. Does the '991 application excerpts
10 that you have -- let me rephrase that.

11 Do the excerpts of the '991
12 application that you have used here in your written
13 description support section, other than Figure 17,
14 do they specifically describe neurons being
15 correlated with instruction sets?

16 A. Again, I think I've answered this
17 question to you already, but I'm happy to answer it
18 again. So you're looking for a single sentence, and
19 that's not how the technical specifications work.

20 When -- a POSITA reading this support
21 that I provided you would come to that conclusion.
22 So when you read the technical support that I

1 provided you from the specification, you read all
2 those sections and the descriptions and et cetera,
3 you would come to that conclusion, that is correct,
4 as a POSITA, from the eyes of POSITA. So it's not a
5 single sentence that says, There it is.

6 Q. Okay. I think I understand.

7 A. You're looking for a single sentence,
8 and that's not how technical specifications work.

9 Q. Okay. So there is no single sentence
10 that describes input neurons correlated with
11 instruction sets, but reading the specification as a
12 whole, a person of ordinary skill in the art would
13 understand that it's generally described; is that
14 right?

15 A. I mean, off the top of my head, I
16 would have to look and see if there is a single
17 sentence. But as a POSITA reading the support that
18 I provided you, a POSITA would come to that
19 conclusion that you have these inputs correlated
20 with instruction sets based on the descriptions that
21 I provided you.

22 Q. What description that you have

1 provided talk about instruction sets?

2 And specifically, I'm thinking about
3 the -- or I'm asking about the description -- the
4 excerpts of the '991 that you provided from page 190
5 to page 200 in your declaration.

6 A. Correct. So if you look at, for
7 instance, at the top of page 191, it's talking about
8 anticipates instruction sets. If you go to
9 page 192 --

10 Q. All right. Hold on, let's take them
11 one at a time. Okay. Let's do page 191. Then
12 we'll do page 192. Okay.

13 A. Fair enough.

14 Q. So on 191, I see at the top, you've
15 excerpted '991 application 8721 through 26. And it
16 uses the words "instruction sets" twice; right?

17 A. It's talking about instruction sets,
18 that's correct.

19 Q. And does it also talk about input
20 neurons correlated with instruction sets right
21 there?

22 A. Well, as you read that whole section

1 from 190 to 200, as a POSITA, you would come to that
2 conclusion. So there's descriptions along the way.

3 Q. Right. So let's --

4 A. That leads to that conclusion. Like I
5 said to you, it's not a single sentence that you're
6 looking for.

7 Q. Okay. But let's just take them one at
8 a time so that we can be thorough about this.

9 In what you've excerpted at the top of
10 page 191 that you pointed me to earlier, does that
11 excerpt describe neural -- input neurons correlated
12 with instruction sets?

13 A. Well, if you take a look at that
14 excerpt starting on page 190, you see it's talking
15 about artificial intelligence unit 110.

16 Do you see the reference to that?

17 Q. I do.

18 A. Okay. So that artificial intelligence
19 unit has got its -- it's got a knowledge -- if you
20 look at the Figure 12, it's got a knowledge
21 structuring unit, it's got a knowledgebase, it's got
22 a decision-making unit, it's got a confirmation unit

1 all included in that 110.

2 So, you know, this AI unit is a unit
3 that contains obviously, you know, artificial
4 intelligence-type systems, such as neural networks
5 and et cetera. So when you're referring to
6 artificial intelligence unit, a POSITA would
7 understand that that has neurons and neural networks
8 and artificial intelligence, you know, techniques.

9 Q. And so does that describe input
10 neurons correlated with instruction sets for
11 operating a second device?

12 A. Well, it's describing -- like, if you
13 look on page 190, it's describing artificial
14 intelligence unit 110 comprises the functionality
15 for anticipating one or more instruction sets, data,
16 and/or other information. And you can continue on
17 to the next sentence and et cetera, et cetera.
18 Almost every sentence is mentioning artificial
19 intelligence unit. So...

20 Q. Okay. I'll return to my previous
21 question because you were going to continue, and I
22 don't want to cut you off.

1 A. Yes.

2 Q. Where else in what you have cited here
3 for this element describes instruction sets that are
4 correlated?

5 A. Well, go to page 192, starting at the
6 bottom. Let me know when you're there.

7 Q. I'm there.

8 A. So you see it, starting at the bottom,
9 says, In one example shown in Model A that disclosed
10 artificially intelligent devices, systems, and
11 methods for learning and/or using a device's
12 circumstance for autonomous device operation may
13 include a neural network (also referred to as
14 artificial neural network). As such, machine
15 learning, et cetera, et cetera.

16 So you can read that whole entire
17 section there, but obviously, it's describing how
18 that is functionally operating.

19 Q. Okay. And so there's a pretty long
20 cite here going from the bottom of page 192 through
21 to the bottom of page 193.

22 Does that describe instruction sets?

1 A. It's obviously describing what's going
2 on. So that's a pretty long description.

3 Q. Well, okay. But there's a lot going
4 on in this claim element. And it certainly
5 describes things that are not instruction sets.

6 So my question is, very specifically,
7 does it describe instruction sets; and if so, where?

8 A. Well, it's describing the artificial
9 intelligence devices, systems, you know, the
10 functionality. It's talking about the machine
11 learning, the connections, the nodes that obviously
12 process information from input to output where the
13 outputs would be, you know, eventually instruction
14 sets. So --

15 Q. How do you know that?

16 I mean, you said obviously the outputs
17 would be instruction sets. But where does it say
18 that?

19 A. Well, as a POSITA reading the '474,
20 sir, and reading these experts -- these excerpts,
21 you would come to that conclusion. I mean, I'm
22 technically very well savvy in this area, and I

1 can -- when I read it, I can understand what's going
2 on.

3 So you come to that conclusion as a
4 POSITA reading this. Even though the word
5 "instruction set" may not exactly appear where you
6 want it to appear, it's -- that is what it's
7 discussing and what it's getting to.

8 Q. You would agree that the excerpt that
9 you provided from the bottom of page 192 to the
10 bottom of page 193 does not say the words
11 "instruction sets"; right?

12 A. Well, the word "instruction set"
13 doesn't appear exactly in that excerpt, but that
14 description that's being described there would
15 yield -- a POSITA would come to the conclusion and
16 understanding what's going on from that description.
17 I mean, you have a description about activation
18 functions, you know, processing of neurons,
19 connections, computational model, et cetera.

20 Q. Right. But activation functions,
21 processing neurons, computational models, et cetera,
22 those aren't instruction sets; right?

1 A. Well, you are processing the
2 information to arrive at the output that would be,
3 in this particular case, instruction sets.

4 Q. How do you know that?

5 A. Just from reading the '474
6 specification.

7 Q. But the part that you've excerpted
8 here doesn't say that; right?

9 A. I don't -- I don't have to find every
10 single word everywhere and every excerpt to say
11 that.

12 Q. Okay.

13 A. When you read the '474 specification
14 as a POSITA, you would come to that understanding.
15 I mean, that's one of the primary, you know, pillars
16 of the patent.

17 Q. So you would understand, because the
18 '474 patent and the '991 application describes using
19 a neural network, that the inputs of that neural
20 network would be the circumstance representations,
21 and the output of that neural network would be
22 instruction sets?

1 A. Well, that's essentially what's
2 being -- obviously, you're very much simplifying
3 things. But essentially, I mean, the '474 patent is
4 about, you know, correlate -- one of the things it's
5 still talking about is about correlating inputs with
6 instruction sets for operating an autonomous device.

7 I mean, if you look at -- for
8 instance, at the -- if you look at the title of the
9 patent, you see it says, artificially intelligent
10 systems, devices, and methods for learning and/or
11 using a device's circumstance for autonomous device
12 operation.

13 So that's the title of the patent, and
14 that's what the patent is essentially describing.
15 And, you know, the specification, all the pieces are
16 there support -- you know, discuss the details.

17 And if you look at the field, which is
18 on Column 1, starting lines 28 to 32, it talks also
19 about this type of thing.

20 Q. So I want to give you another chance,
21 because I said I would, to continue looking at what
22 you've cited from pages 190 to 200 for description

1 of instruction sets. We left off on page 193.

2 Is there anything else in this
3 collection of cites on this page range that talks
4 about instruction sets?

5 A. Well, as I mentioned to you already, I
6 mean, the whole -- that citation from 192 -- or
7 190 -- from page 190 to page 200 provide support for
8 that amendment that's being proposed, and support
9 describes the details of where that language is
10 found -- you know, the support for that language in
11 the specification.

12 So it talks about the details. You
13 know, you have a flow chart on Figure 34 on
14 page 195. You have another figure on page 19- -- so
15 these are the details that support that particular
16 amendment, and these are essentially the citations
17 from the '474 that provide support for that.

18 Q. And you can't identify a single
19 explicit disclosure from the '991 application that
20 you've cited here that describes input neurons being
21 correlated with instruction sets?

22 A. I'm not sure what you mean by

1 "explicit disclosure." The disclosures that are
2 there described as -- describe what I just described
3 to you, is how the systems are functioning. And
4 that big citation on page 193 provides a lot of
5 details about the AI, the neurons, the connectivity,
6 the systems, the mathematics, how it functions, the
7 activations, the object manipulations, the data
8 structures, the computational models, the predictive
9 modeling, et cetera, et cetera.

10 So a POSITA reading this -- you know,
11 a neural network, for instance, is being cited there
12 multiple times. So a POSITA reading this would come
13 to that understanding, that you have input neurons
14 and then you have essentially a neural network
15 that's being created, manipulated, modeled,
16 functioned, trained, et cetera, to come to this
17 conclusion to support that particular motion to
18 amend.

19 Q. Okay. I want to ask you about some
20 other language, and this is in 85.11. We can look
21 at it in the motion to amend or we can look at it
22 here in your declaration. It doesn't really matter

1 to me, but it's -- in the motion to amend, it's
2 85.11.

3 So tell me when you're there, and I'll
4 ask you some questions about it. If you want to
5 look in your declaration, it's on page 173. It
6 doesn't matter to me.

7 A. Okay. So I'm looking at the generated
8 circumstance representation, and then go on and go
9 from there; correct?

10 Q. That's right.

11 A. I'm at page 173 of my declaration.

12 Q. Okay. You may want to have the motion
13 to amend language handy just because it may be
14 helpful for context to look at that claim element
15 with --

16 A. Yes, so I have the motion to amend
17 language on the screen here in front of me.

18 Q. Okay. All right. Good.

19 A. And I have the declaration with the
20 support in front of me in hard copy. So I can see
21 both. I also have it electronically.

22 Q. All right. So 85.11 -- well, you know

1 what, I'm sorry, I need to back up a little bit.

2 If you look all the way back up at
3 85.4, it talks about one or more non-transitory
4 machine readable media storing machine readable
5 code.

6 Do you see that?

7 A. Yes.

8 Q. What does that mean?

9 A. Basically, I mean, in -- just to say
10 things in a -- like, essentially, I mean, software
11 it says, but, you know, attorneys like to provide
12 these languages. But they're essentially talking
13 about machine readable media storing readable code.
14 So, you know -- and the support for that is back in
15 my declaration.

16 Q. I know there's support for it. I'm
17 not even going to ask you that question here.

18 A. Yeah, so you essentially have machine
19 readable media, maybe memory or something that's
20 storing code, and that's being -- that code is being
21 executed on one or more processors, and when it's
22 executed, it causes the processors to perform A, B,

1 C, D, and E.

2 Q. So in this case, it's executable code;
3 is that right?

4 A. Well, it's machine -- storing machine
5 readable code that one executed. So that code will
6 get executed on one or more processors, and then the
7 processors would cause the one or more processors to
8 perform a set of functions. Yeah, so it's not done
9 manually, obviously.

10 Q. So where I'm going -- it will all make
11 sense in a minute. And so the processors here, the
12 one or more processors, perform steps of generating
13 and determining.

14 That's in 85.5 and 85.6; right?

15 A. Generally speaking, yes.

16 Q. And then when we jump down all the way
17 to 85.9, it picks up with the machine readable code
18 again; right?

19 A. Yes.

20 Q. And so starting at 85.9, we have
21 machine readable code that is executed by one or
22 more processors, and then we have additional steps

1 that happen after that; right?

2 A. Generally speaking, yes. I mean,
3 further causes one or more processors to perform A,
4 B, C, D, and E.

5 Q. And so the first one of those things
6 is 85.10, generating a stream of circumstance
7 representations.

8 You see that?

9 A. I do.

10 Q. What does it mean for a processor to
11 generate a stream of circumstance representations in
12 this context?

13 A. Well, that's described in the support
14 for that particular element. And let me see if I
15 can find that element in my declaration.

16 Q. So you don't have to search for it,
17 it's on page 168.

18 A. Great. Thank you.

19 So you can see there on page 168, that
20 particular element is listed, and there is a
21 description -- there's support for where that
22 element is in the specification. And that support

1 goes on from page 168 to page 173.

2 Q. Okay. So what does it mean for a
3 processor to generate a stream of circumstance
4 representations in this context?

5 A. Well, you can see on page 168 -- down
6 towards the bottom, you see, an object processing
7 Unit 93 comprises a functionality for creating and
8 generating a stream of collection of object
9 representations. A stream of collection of object
10 representations may include one or more collection
11 of object representations, groups, sequence,
12 plurality, and some aspects -- so it's describing
13 the details there.

14 If you look to page 69, like halfway
15 in the middle of the page, you can see,
16 circumstances including objects with various
17 properties surrounding change, et cetera, over time,
18 and, et cetera, et cetera. So you continue -- I
19 mean, it's describing basically what object and
20 circumstance representations would mean.

21 Q. Does the processor generate a stream
22 of circumstance representations from the sensors?

1 A. Well, that's initially where you're
2 capturing the information from. I mean, the sensors
3 are looking at the scenery and capturing the
4 scenery, which has objects and objects are moving,
5 et cetera. So that's where that capturing starts,
6 that's correct.

7 Q. And then the processor running
8 executable code takes that sensor information and
9 generates a stream of circumstance representations.
10 Is that your understanding of how it
11 works?

12 A. Well, it generates, obviously, object
13 representations, structures, links, connectivity,
14 motion data. I mean, there's a lot of details that
15 go with that. But, yes, that's the idea.

16 Q. And --

17 A. If you look on page 169, like halfway
18 in the middle there, you see a stream of object
19 representations may, therefore, include knowledge of
20 device, circumstances including this and that, and
21 then circumstances including objects with various
22 properties, objects and their properties change,

1 move, act, transform over time.

2 So, obviously, you're analyzing the
3 scenery to create these object representations and
4 circumstance representations.

5 Q. Okay. And then in 85.11, we get some
6 requirements for the circumstance representation;
7 right?

8 A. Yes. Well, yes. Generally speaking,
9 yes.

10 Q. Well, it's not generally speaking.
11 85.11 gives us --

12 A. Yes.

13 Q. -- requirements for the circumstance
14 representations; right?

15 A. Yes. I mean, you know, like I said,
16 I'm not an attorney. So -- yes, I see that. It
17 says the generating circumstance representation that
18 (i) includes multiple object representation, data
19 structures that comprise this and that, and then
20 represent multiple objects detected at a first time.

21 Q. And if you look on page 176 of your
22 declaration. You just have an excerpt there to

1 Figure 4B. So it's convenient to look at.

2 A. You said 176 of my dec- --

3 Q. Yes, sir.

4 A. Okay. And this is -- okay. So this
5 is with regards to 85.11; correct?

6 Q. That's right.

7 A. And I like how you have it numbered
8 there. I like how they're numbered there.

9 176, yes. So 176 is two figures,
10 Figure A and Figure B.

11 Q. That's right. Okay. So let's look at
12 Figure 4B for just a second.

13 A. Correct.

14 Q. So I see in Figure 4B, there's a
15 collection of object representations. And then for
16 each object representation, we see a little table.

17 A. Yes.

18 Q. It says, Type, Distance, Bearing, and
19 then some dots, some ellipses; right?

20 A. Yes, correct.

21 Q. And is that your understanding of
22 object representation data structure?

1 A. So, I mean, that's obviously a
2 description of a data structure for an object
3 representation.

4 Q. Okay.

5 A. There's more details in the
6 specification, but this is just showing you an
7 illustration of an object representation data
8 structure.

9 Q. All right. And so if we look back at
10 85.11, we have to have multiple object
11 representation data structures that each comprise,
12 and then we get a little list; right?

13 A. Correct.

14 Q. And the first one of those is a label
15 for object type; right?

16 A. Yes.

17 Q. Second one is coordinates for object
18 location; right?

19 A. Yes.

20 Q. And the third is a computer model for
21 object size; right?

22 A. Yes.

1 Q. What is a computer model for object
2 size?

3 A. Well, the computer model of the
4 object. So you have a computer model of the object
5 so you can get an idea and the scene. You know, is
6 this 15 pixels or 500 pixels, if I'm looking at an
7 image.

8 Q. Okay. And so within this data
9 structure, you've got a label, you've got
10 coordinates, and then you've got a computer model;
11 right?

12 A. Correct.

13 Q. Okay.

14 A. For object size, yeah.

15 Q. Okay. And then romanette (ii) says
16 that this representation is to represent multiple
17 objects detected at a first time; right?

18 A. Yes.

19 Q. And then just for comparison sake, if
20 you jump down to 85.12. 85.12 says --
21 romanette (ii) there says, represents the multiple
22 objects detected at a second time.

1 Do you see that?

2 A. Yes.

3 Q. How does a person of ordinary skill in
4 the art understand these depictions of first time
5 and second time?

6 A. Different time intervals.

7 Q. Okay.

8 A. You saw something now and, say,
9 50 seconds later, you saw something again.

10 Q. Okay.

11 A. The first time you saw something, you
12 created the structures. And then another
13 circumstance representation at 812 that includes
14 another multiple object representation, et cetera,
15 et cetera, and represents the multiple objects
16 detected at a second time.

17 So I may see a car now and ten seconds
18 later if I'm doing another poll, I see that car
19 again, and in a sense that's the first time, second
20 time. I mean, I'm just giving you a generic
21 illustration, but that's --

22 Q. Okay.

1 A. You have multiple instances of that
2 object.

3 Q. Okay. And that's actually where I was
4 going. So we may be able to reach agreement here.

5 So romanette (ii) for 85.11 says that
6 the generated circumstance -- well, for 85.11, we
7 have the generated circumstance representation. And
8 romanette (ii) says that that represents multiple
9 objects detected at a first time; right?

10 A. Correct.

11 Q. And then for 85.12, we have another
12 circumstance representation. And --

13 A. Yes.

14 Q. -- romanette (ii) for that one says,
15 represents the multiple objects detected at a second
16 time; right?

17 A. Yes.

18 Q. And so my question is: Is the
19 multiple objects detected at a second time the same
20 objects that were detected at a first time?

21 A. I mean, I'm not a patent attorney,
22 obviously. So, you know, I can tell you from a

1 POSITA reading this, so 85.11 is representing
2 multiple objects detected at a first time. And when
3 it says, represent the multiple objects, it's
4 essentially referring to the multiple objects from
5 85.11.

6 So you have, I don't know what you
7 call it, an antecedent basis, so to speak. But
8 you're referring to these -- you've got a --
9 circumstance representations are multiple objects
10 that you created on the first time.

11 And then you have another circumstance
12 representation of these set of objects, but there
13 may be something that appeared there, a new object
14 that obviously would be collected in that
15 circumstance representation. But this is referring
16 to the multiple objects that were detected at the
17 first time.

18 Q. Okay. It feels good to reach
19 agreement; doesn't it?

20 A. I think we can stop right now and be
21 all done. I think we're in good shape.

22 Q. So we've been going for about another

1 hour. I'm good to take a break now, or we can keep
2 going. Up to you guys. It doesn't matter to me.

3 A. I think it may be -- how about maybe
4 five to ten-minute break will be good.

5 MR. COLVIN: Yeah, let's go off the
6 record and take a ten-minute break.

7 THE REPORTER: We're off the record.
8 (Recess from the record.)

9 THE REPORTER: We're back on the
10 record.

11 BY MR. COLVIN:

12 Q. Welcome back, sir.

13 A. Thank you, sir.

14 Q. Did you talk with counsel over the
15 break?

16 A. No, I have not.

17 Q. Okay. Let's pick back up with the
18 Claim 85.

19 A. Yes, sir.

20 Q. And I want to start now with 85.13.

21 A. Okay.

22 Q. It starts with "wherein the

1 determining."

2 Do you see that?

3 A. Yes, I do see that.

4 Q. And this determining is done by the
5 processor executing the machine readable code; is
6 that right?

7 A. Yes, the assumption is everything is
8 done by the processor.

9 Q. And the determining here has a
10 requirement that it include inputting the multiple
11 object representation data structures of the stream
12 into the one or more input neurons. And then it
13 goes on.

14 You see that?

15 A. Give me one moment. Wherein the
16 determining -- yes. You're at 85.15; correct?

17 Q. Yes, that's right.

18 Do you have it all in front of you,
19 sir? I want to just give you time if you need it to
20 get organized.

21 A. Yes, I have it in front of me.

22 Q. And then this 85.13, that includes the

1 language that we talked about earlier about using a
2 correlation between the one or more input neurons
3 and the one or more instruction sets for operating
4 the second device.

5 Do you see that?

6 A. Yes.

7 Q. And you agree, I think, that the
8 correlation between the one or more input neurons
9 and the one or more instruction sets for operating
10 the second device, that correlation is inside of a
11 neural network; right?

12 MR. JAIRAM: Objection to form.

13 THE WITNESS: Well, as we discussed
14 earlier, I mean, the correlation here -- what
15 it's stating is the correlation between one
16 or more input neurons. So these are input
17 neurons to essentially a neural network.

18 And using a correlation between the
19 one or more input neurons and the one or more
20 instruction sets for operating the second
21 device. So the instruction sets would
22 essentially be at the output.

1 BY MR. COLVIN:

2 Q. Of the neural network?

3 A. Yes, I mean, you are -- as I pointed
4 you earlier to the support in this -- for this
5 particular claim element, you know, motion to amend
6 claim element, so you can see essentially on
7 page 193 of my declaration the discussion about, you
8 know, the model A, the neural network, the data, the
9 modifying, the activation functions, et cetera,
10 et cetera, et cetera, et cetera.

11 Q. Is every output of a neural network
12 correlated with the inputs to that neural network?

13 A. I don't know what you mean.

14 Q. Well, neural networks have inputs and
15 outputs; right?

16 A. Generally speaking, yes.

17 Q. And generally speaking, are all of the
18 outputs of a neural network correlated with the
19 inputs of a neural network?

20 A. Well, I mean, in this case, obviously,
21 it would be -- you're correlating inputs with the
22 appropriate instruction sets. So you wouldn't --

1 you know, the correlations would be made
2 intelligently. It's not just, you know, randomly
3 correlating them.

4 Q. So looking now at 85.14, very similar
5 language between 85.13 and 85.14; right?

6 A. Generally speaking, yes. But,
7 obviously, there are some distinctions.

8 Q. Sure. So I don't want to talk about
9 those distinctions.

10 In 85.14, it's about determining the
11 instruction sets for operating a third device;
12 right?

13 A. Well, determining another one or more
14 instruction sets, yes.

15 Q. Yeah, for operating a third device;
16 right?

17 A. Correct.

18 Q. And it does that by using a
19 correlation between the one or more input neurons
20 and the -- another one or more instruction sets for
21 operating the third device; right?

22 A. Well, I mean, as you mentioned, this

1 is talking about the third device. You have another
2 one or more instruction sets for operating a
3 third device, and it discusses the details.

4 Q. And so I want to point you to some
5 specific language here, and that's the -- in 85.14,
6 it says, using a correlation between the one or more
7 input neurons. And then in 85.13, it also says, and
8 using a correlation between the one or more input
9 neurons.

10 Do you see how that language is the
11 same in both 85.13 and 85.14?

12 A. Yes.

13 Q. So when the system is determining the
14 instruction sets for operating a third device, it
15 uses the same one or more input neurons that it used
16 for determining the instruction sets for operating
17 the second device; right?

18 A. Well, it's referring to the one or
19 more input neurons, but obviously, you would do this
20 intelligently. You wouldn't -- you know, it depends
21 on what the input neurons are. You know, you would
22 do this intelligently.

1 But, yes, it is using a correlation
2 between the one or more input neurons to the neural
3 network. So there may be a hundred inputs, but you
4 might be using 80 of those for something and 60 for
5 another.

6 Q. Okay.

7 A. It's not -- you would do this,
8 obviously, technically intelligently. It wouldn't
9 be just a random set of pick.

10 Q. Okay. All right. I appreciate that.

11 I'm talking about the claim language
12 but I think I understand what you're saying and
13 maybe we can tease it out like this.

14 So for 85.13, you have one or more
15 input neurons that are correlated for operating the
16 second device. We agree with that; right?

17 A. Well, whatever 85.13 is saying, it is
18 there on the screen.

19 Q. Well, right, but I --

20 A. Yes.

21 Q. Okay.

22 A. It's talking about the second device.

1 Generally speaking, it's talking about the second
2 device.

3 Q. Do you agree or disagree that the same
4 one or more neurons that are correlated with the
5 instruction sets for operating the second device
6 have to be the same one or more neurons that are
7 correlated to the instruction sets for operating the
8 third device?

9 MR. JAIRAM: Objection to form.

10 THE WITNESS: I don't understand your
11 question. I mean, 85.13 says, using a
12 correlation between the one or more input
13 neurons. So it's referring to the one or
14 more input neurons. So there is 10
15 neurons --

16 (The reporter seeks clarification.)

17 THE WITNESS: Okay. So let me repeat
18 from the beginning so it's clear.

19 So 85.13 is saying, using a
20 correlation between the one or more input
21 neurons. So it recognizes that a neural
22 network has one or more input neurons in

1 addition between those and the one or more
2 instruction sets for operating the second
3 device.

4 85.14 is, again, using a correlation
5 between the one or more input neurons and
6 the -- another one or more instruction sets
7 for operating a third device that might be
8 different from the second device.

9 BY MR. COLVIN:

10 Q. And so the input neuron -- the one or
11 more input neurons are the same in 85.13 and 85.14;
12 right?

13 A. No, as I mentioned to you earlier, you
14 have a series of input neurons that doesn't mean --
15 I mean, if I have instruction A, I may use 6 of
16 them. And if I have instruction B, I may use 15.
17 So it doesn't mean -- you know, using the
18 correlation between the one or more input neurons --
19 so you're using -- you have one or more input
20 neurons that you're using that correlation with the
21 instruction sets.

22 So you would do this, obviously,

1 intelligently, not -- you know, in an intelligent
2 way for it to be functioning properly.

3 Q. Can we look at -- keeping this
4 language in mind and maybe keep it up on a different
5 screen, can we look at Figure 17A for a moment.

6 A. Which page of my declaration are you
7 referring to, sir?

8 Q. You have one on page 192, if you want
9 to look at it there. You can look at it in the
10 patent. I don't really care.

11 A. 192 is fine.

12 Q. Yeah.

13 A. Oh, Figure 17, again?

14 Q. Yes.

15 A. That's the famous figure we've been
16 talking about.

17 Q. Very famous figure.

18 A. Yes.

19 Q. Let's look at model A.

20 A. Yes.

21 Q. And I want to -- I want to talk about
22 85.13 with respect to model A and Figure 17, if we

1 can. Okay?

2 A. Yes.

3 Q. So I think we previously established
4 that model A has input neurons on the left-hand and
5 output neurons that could be instruction sets on the
6 right.

7 That's your opinion; right?

8 A. Generally speaking, that's how neural
9 network are presented. You have input neurons on
10 the left and output neurons on the right.

11 Q. It's your opinion that the correlation
12 between the input neurons on the left and the output
13 neurons on the right is all that stuff in the
14 middle; right?

15 MR. JAIRAM: Objection to form.

16 THE WITNESS: Well, it's all the stuff
17 described, as I mentioned to you, in
18 pages 192 to 200. So those are excerpts from
19 the spec that described the stuff, but
20 obviously, the specification describes the
21 entire system.

22

1 BY MR. COLVIN:

2 Q. Okay. I'm not intending for this to
3 be a trick question at all. Let me reset, and let's
4 see where this goes. This is fun.

5 Input neurons on the left -- we're
6 looking at, again, model A, Figure 17. Input
7 neurons on the left. Output neurons that could be
8 instruction sets are on the right.

9 Generally speaking, that's correct;
10 right?

11 A. Generally speaking, yes.

12 Q. And the input neurons are correlated
13 with the instruction sets, output neurons.

14 That's your opinion; right?

15 A. That's what the '474 -- one of the
16 things the '474 is proposing, yes.

17 Q. Okay. And in between the input
18 neurons on the left and the output neurons on the
19 right, we see connections and another set of four
20 neurons; right?

21 A. Well, this is, obviously, an
22 illustration, but that's -- obviously, that's not

1 what the entire system of the '474. This is just an
2 illustration to help you visualize -- you know, we
3 do this scientifically. You know, we give you an
4 illustration to help you visualize something, but
5 that's obviously not -- that's a very trivial
6 illustration compared to what's happening in the
7 '474.

8 Q. '474, and their typical neural
9 network, much more complex than the general cartoony
10 description shown in model A of Figure 17; right?

11 A. That's generally the case, yes.
12 Obviously, the system here is much more complicated
13 than what's drawn in that figure there.

14 Q. Okay. But for model A, we have three
15 input neurons and two output neurons; right?

16 A. Generally speaking, yeah, that's the
17 case. That's what's illustrated. But, again, this
18 is trivial illustration in comparison to what's
19 being discussed.

20 Q. Sure.

21 And so when we look at Claim
22 Element 85.13, it describes using a correlation

1 between the one or more input neurons and the one or
2 more instruction sets for operating a second device;
3 right?

4 A. Yes.

5 Q. And could we say, generalizing a bit
6 perhaps, that the three input neurons shown in
7 model A of Figure 17 are the one or more input
8 neurons described in 85.13?

9 MR. JAIRAM: Objection, form.

10 THE WITNESS: I'm not sure what you're
11 asking. I mean, there are input neurons to
12 the neural network that's being described in
13 the '474.

14 I don't want to refer to model -- this
15 model A as that system. Because that,
16 obviously, is an illustration. And as I
17 mentioned to you, that trivializes the whole
18 concept of what's being described in the
19 '474. So the system of '474 has input
20 neurons, yes.

21 BY MR. COLVIN:

22 Q. And -- well, I mean, it's interesting

Page 112

1 that you say that, that the model A of Figure 17
2 does not support the idea of input neurons -- of one
3 or more input neurons, like as described by 85.13?

4 MR. JAIRAM: Objection, form.

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

6 What I said --

7 BY MR. COLVIN:

8 Q. Okay. Then it is okay to do that?

9 A. Well, what I said is model A is a
10 simplified -- is a simple illustration to help the
11 reader understand what's going on. But, obviously,
12 the system of '474 is much more complicated than
13 just that -- what's in that --

14 Q. Yeah, I -- look, if you want to caveat
15 every answer that you give with model A is a
16 simplified illustration of the more complex neural
17 network that would be in real life or as described
18 by '474, I'm fine with that.

19 I'm just trying to get a baseline so
20 that we can discuss input neurons and instruction
21 sets, as used in the claim, which you have said is
22 supported by Figure 17; right?

1 MR. JAIRAM: Objection, form.

2 THE WITNESS: Well, it's not just
3 Figure 17. It's Figure 17. It's the
4 descriptions from page 191 or 192 to
5 page 200. So there's a series of
6 descriptions there that support this
7 particular claim element that are excerpted
8 from the '474.

9 But, obviously, as a POSITA reading
10 the '474, there's an entire system there
11 that's being described.

12 BY MR. COLVIN:

13 Q. Yeah.

14 Could we say that the output neurons
15 of model A to Figure 17 are representative of the
16 instruction -- the one or more instruction sets for
17 operating the second device from 85.3 page?

18 A. Again, I don't want to trivialize the
19 '474 by just saying, okay, model A. But '474 has a
20 system that has input neurons. And there are output
21 instructions that the system would obviously apply
22 to whatever the autonomous device that's trying to

1 drive. So there is a complicated system in between
2 that does all the things that we've been talking
3 about.

4 Q. Yeah, I understand that. That's not
5 responsive.

6 A. It's not as trivial as -- the
7 illustration there doesn't -- it's not the whole
8 system in a sense and what's described. It's just
9 an illustration to help you see what's going on.

10 Q. Yeah, and I'm not talking to you about
11 the whole claim language either. I'm talking to you
12 about instruction sets that are output neurons --

13 A. Right.

14 Q. -- that you've said are in model A in
15 Figure 17; right?

16 A. Well, this is just -- you know, you
17 got to go back to what's going on here, right. So
18 85.13 is on page 190 of my declaration. That --
19 that element of the claim that's being proposed for
20 a motion to amend is supported by the material
21 that's between, say, 190 and page 200.

22 That's the support for that particular

1 element. So there's several discussions there.

2 It's not just a single figure.

3 Q. Sure.

4 A. There's additional discussions,
5 details, additional figures. So it's not just the
6 simple figure.

7 Q. And if we're looking at 85.13 and
8 model A, you agree that model A shows -- in fact,
9 it's your opinion that model A shows input neurons
10 correlated with the one or more instruction sets for
11 operating the second device; right?

12 A. Well, this provides support to that
13 claim element. That's one of the items that provide
14 support. There's other descriptions there that
15 provide support to the claim element.

16 Q. It's more than that, sir. It is your
17 opinion that model A of Figure 17 shows input
18 neurons correlated with instruction sets for
19 operating a second device; right?

20 A. I mean, generally speaking, that's the
21 idea. I mean, you're looking at page 192 of my
22 declaration where you're picking up on that one

1 sentence, but it's not just one sentence is what I'm
2 trying to explain to you. There is a whole
3 description here that supports what's going on, why
4 this claim element is being proposed for a motion to
5 amend.

6 Q. Is it still your opinion that model A
7 shows input neurons correlated with instruction sets
8 for operating a device? Is that still your opinion?

9 A. That's what's in my declaration, I
10 mean, yes, that is my opinion. But I'm just telling
11 you it's not just limited to one that --

12 Q. Okay.

13 A. You're picking up on one sentence.
14 And what I'm trying to tell is you're taking a
15 sentence out of a whole context of descriptions and
16 just focusing on that one sentence, and you're
17 ignoring the entire description around that.

18 Q. Is it your opinion that model A of
19 Figure 17 shows the correlation between one or more
20 input neurons and the one or more instruction sets
21 for operating the second device or not?

22 A. I mean, this is obviously an

1 illustration just to kind of illustrate the idea,
2 but that's -- that is, you know, trivializing what
3 the patent is about. The patent is more than just
4 this particular illustration.

5 This is just an illustration to show
6 you, like, say, look, you have input neurons and you
7 have output neurons and you have connections between
8 them. But this is just an illustration. You're
9 taking, I think, this sentence out of an entire
10 context of details and what's described in the '474.

11 Q. And so with the understanding that
12 model A that is an illustration to illustrate that
13 idea, why are you so resistant to me wanting to call
14 the input neurons on the left side of model A the
15 one or more input neurons of 85.13?

16 MR. JAIRAM: Objection to form.

17 THE WITNESS: I'm not resistant.

18 BY MR. COLVIN:

19 Q. Okay.

20 A. I'm just saying --

21 Q. Well, let's do that, then.

22 A. But I'm not -- what I'm saying to you

1 is you're trivializing what -- I mean, you're
2 picking up one illustration out of a context of
3 things and then basically trivializing that. And
4 you have to look at the entire context of what's
5 being described, not just a single figure in a
6 single sentence.

7 Q. Is there another illustration in this
8 patent that you would rather me look at to try and
9 put input neurons and instruction sets on a neural
10 network?

11 A. The '474 specification.

12 Q. Okay. All right. I'm doing that.

13 A. Yeah, I mean, there's a description of
14 an entire system there. It's described in the '474
15 specification. It's not just one figure and one
16 sentence. Otherwise, you don't need the rest of the
17 specification. You just look at one figure and one
18 sentence.

19 So there is a specification there that
20 describes all the details, and I think you're taking
21 this out of context.

22 Q. Okay. You understand that the patent

1 trial and appeal board gets a copy of this
2 deposition transcript; right?

3 A. I'm more than happy to provide a copy,
4 yes.

5 Q. Okay.

6 A. Yes. And this is not my first rodeo,
7 so to speak.

8 Q. And you got copies of your other
9 deposition transcripts in the other IPRs; right?

10 A. I have received them and reviewed
11 them, yes, sir, in every IPR that I provided.

12 Q. Okay. Do you know the outcome of the
13 previous IPRs that you and I have done for this
14 case?

15 A. I have reviewed, yes, the written --
16 the final decisions or whatever they're called --
17 exactly called. But, yes, I have reviewed them.

18 Q. Okay. So that if we look at 85.13 and
19 85.14 together, we understand, I think you'll agree,
20 that there has to be two sets of correlations.
21 There's a correlation between the input neurons and
22 the instruction sets for operating the second device

1 and a correlation between input neurons and
2 instruction sets for operating a third device.

3 Generally that's true; right?

4 A. Yeah, I mean, there's a correlation
5 between the input neurons and the one or more
6 instruction sets for the second device. That's
7 85.13. And using a correlation between the one or
8 more input neurons and another one or more
9 instruction sets for operating the third device.

10 Q. Where does the support in the
11 specification lie for two different -- for
12 correlations for two different instruction sets?

13 A. Well, if you look at my declaration,
14 so starting on page 190, you have the support for
15 85.13. And starting on page 201, you have the
16 support for 85.14. And that goes on to, it looks
17 like, page 212.

18 Q. So I don't think you -- in your
19 declaration you ever describe a neural network that
20 has correlations to instruction sets for two
21 different devices. I want to give you the
22 opportunity here to prove me wrong. So I'm going to

1 ask you a question, and let's try to prove me wrong.

2 Where in your declaration do you
3 identify where the '991 application describes a
4 neural network that has correlations to two
5 different devices?

6 A. I believe I've already answered that
7 question for you, but I'm happy to answer it again.

8 So I provided you with the pages that
9 provide support for 85.13 from the specifications.
10 And then I provided you with the pages that provide
11 support for 85.14 in the specification.

12 Q. And where in that support that you
13 have provided does it describe neural network that
14 is correlated with instruction sets for two
15 different devices?

16 A. Well, when you read the -- when you
17 read the specifications, a POSITA reading that would
18 come to the understanding that the system doesn't
19 just support one device. So, I mean, you have to
20 have -- you know, a POSITA reading the specification
21 of the '474 or the '991 would come to that
22 understanding that that particular system supports

1 more than a single device.

2 Q. How does this neural network of the
3 '474 patent have the instruction sets for the second
4 device and the third device in it such that a
5 correlation to those things could be made?

6 A. Well, it's part of how the system is
7 designed. For instance, look at page 200, where I
8 gave you an example there. Page 200 in my
9 declaration, you see I give you an example there
10 under Figure 38, second device loader 98A, for
11 instance, which, obviously, is different from -- you
12 go on page 211 in my declaration, you see a
13 third device boat 98B. So that boat obviously has
14 different instruction sets than the loader.

15 So you understand -- as somebody that
16 is a POSITA reading the specification of the '474
17 would understand that that system's capable of
18 operating multiple devices. In these figures here
19 that I pointed you to, you have a loader in one
20 device -- in one figure, and a boat in another
21 figure, which are obviously different devices and
22 have different instruction sets.

1 Q. Right. But the Claim 85 is a first
2 device that's doing all of these things; right?

3 A. I don't know what you mean by first --
4 I mean, you're using a correlation between the one
5 or more input neurons and the one or more
6 instruction sets for operating a second device. And
7 then in the 85.14, it's referring to a third device.

8 Q. Right. But where is the processor
9 that's doing all of these things, sir?

10 A. I mean, I provided you with the
11 citations from the specification that -- that
12 describe these details. And, obviously, when you
13 read the '474 patent specification as a POSITA, you
14 would come to that understanding.

15 Q. Is it your understanding that Claim 85
16 requires a first device with processors that -- one
17 or more processors that analyzes the correlation
18 between input neurons and the instruction sets for a
19 second device and also input neurons and the
20 correlation between those and a third device?

21 A. Well, if you look at Claim 85, you
22 have a first device comprising. And you start 85.1,

1 the knowledgebase; .2, the sensors; .3, the
2 processors; .4, the non-transitory machine readable.
3 And then you get into the remaining pieces,
4 generating a circumstance representations,
5 et cetera. And the support for each one of those is
6 in my declaration.

7 Q. How is it that a neural network can
8 have correlations to instruction sets for operating
9 a second device and a third device?

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

11 Q. Well, that's my fear, sir.

12 A. Well, I don't think you're -- I don't
13 think you're asking a question that makes any sense.
14 I mean, neural networks have multiple outputs. So
15 output 1 could be move the chair. Output 2 could be
16 have a drink of coffee. Those are two different
17 instruction sets.

18 Q. Right.

19 A. So I could have different instruction
20 sets at the outputs to operate different devices.

21 Q. Can you give me an example?

22 A. Well, I could have an instruction set

1 on output 1 to drive forward with my car. I could
2 have an instruction set on output 2 to drive
3 backward.

4 Q. With your car?

5 A. With the car. I could have an
6 instruction set on output 3 to move a loader, to
7 move the arms on a loader or something. I mean,
8 it's how -- it depends on how you design the network
9 and what are the specifics of that network, given
10 the inputs that it's seeing.

11 Q. And you agree that Claim 85 requires a
12 neural network where the input neurons are
13 correlated to both instruction sets for a second
14 device and also instruction sets for a third device;
15 right?

16 A. Yes. I mean, generally speaking, yes.
17 You know, they're correlated. But as I said to you,
18 that is obviously done in an intelligent way. It's
19 not just a random setup by chance. There's an
20 intelligent system between the inputs and the
21 outputs.

22 Q. How do you create a neural net that

1 has instruction sets for operating a second device
2 and also instruction sets for operating a
3 third device where both of those are correlated with
4 input neurons?

5 A. You would have to take my course on
6 advanced neural networks.

7 Q. Or I could ask you that question in a
8 deposition.

9 A. Yes, but it's a whole course that I
10 probably can't explain to you in about a sentence or
11 two in a deposition, but --

12 Q. Okay. Try.

13 A. You would design the network properly
14 to handle multiple instructions. We do this all the
15 time. I mean, when you accessed GPT and you ask it
16 something and I access it and I ask it something
17 different, does it give you what I asked? No. It
18 gives you what you asked.

19 You ask it, you know, show me my
20 favorite vacation in Bahamas, it will give you some
21 stuff on that. I may ask it, Provide me an outline
22 for my advanced neural network course, and it will

1 provide an outline. It's not going to show me your
2 vacation in the Bahama.

3 Q. Does the neural network have to be
4 trained -- does the correlation between input
5 neurons and the instruction sets for the second
6 device have to be trained for the neural network?

7 A. Well, certainly you have to have
8 training for the neural network and retraining, as
9 needed, to -- you know, to update, expand, change,
10 you know, upgrade its capacity and ability to handle
11 larger and larger datasets or more diverse datasets.
12 We do this all the time.

13 Q. How do you train a neural network to
14 correlate -- to have correlations between the input
15 neurons and the outputs that are instruction sets
16 for operating different devices? What would be one
17 way of doing that?

18 A. You should definitely take my course
19 on advanced neural network, and we'll teach you
20 exactly -- we'll walk you through back propagation
21 and convulsional neural networks, and we'll teach
22 you how to do the training and how to check for

1 whether it's overfitting or generalizing and how to
2 do dropouts and how to do proper back propagations
3 and how to go after exploring gradients versus
4 diminishing gradients and how to change activations,
5 change learning parameters, do a scheduling rate,
6 use mini batches. There's a whole scheme of things
7 that are part of the training process, yes.

8 Q. Are those things described in the '474
9 patent?

10 A. Well, the things are specific to what
11 the '474 is talking about are described. Like back
12 propagation is mentioned there, but back propagation
13 is a well-known algorithm.

14 Q. I see. So --

15 A. It was published probably in -- I
16 don't know, maybe initially in the late '70s or
17 something and then maybe mid-'90s or early '90s,
18 somewhere there. It was published long before the
19 '474, back propagation as an algorithm.

20 Q. What's described in the '474 patent
21 for being able to create a neural network that has
22 correlations between input neurons and instruction

1 sets for multiple devices?

2 A. Well, I mean, you have a long
3 specification that describes the details of the
4 systems, all the data -- representations of objects,
5 you know.

6 Q. Show me one example where that's
7 described in the '474 patent?

8 A. Well, I've given you several citations
9 of -- with regards to this claim elements that we
10 are talking about. Those are all -- like, for
11 example, if you look at Claim Element 85.13, I've
12 given you several citations to the '991 and the '474
13 where that is described.

14 Q. Show me one where it describes the
15 neural network being trained to have a correlation
16 with multiple devices. I don't think you can.

17 A. Well, I mean, if you look at -- I
18 mean, the patent itself talks about -- you know,
19 like, for instance, if you search on back
20 propagation --

21 (The reporter seeks clarification.)

22 THE WITNESS: So if you search, for

1 instance, on back propagation, I'll just give
2 you an example here. Like, go to Column 108,
3 lines -- starting at line 16, going to the
4 next Column 109.

5 So you see it talks about back
6 propagation, adjust occurrence counts and/or
7 weights of connections for future
8 predictions.

9 Any combination of nodes which you may
10 adjust connections, layers, other elements or
11 techniques can be implemented. It's talking
12 about feed forward versus back propagating,
13 obviously, the error to train it.

14 You can also utilize a recurrent
15 neural net or convolutional neural net or
16 deep neural net as you structure your back --
17 you know, because the back propagation
18 typically is done on what we call a fully
19 connected neural network.

20 So you have, for instance, a
21 convolution neural network that handles the
22 imagery and then feeds into a fully connected

1 neural network that does some of the
2 classifications and zeros in on the
3 instructions. So, I mean, there's an
4 intelligent process of how this is done.

5 BY MR. COLVIN:

6 Q. Yeah, so nothing you said there has
7 anything to do with the neural network being trained
8 on multiple devices, or I should say showing a
9 correlation between input neurons and instruction
10 sets for multiple devices.

11 So can you show me something like
12 that? Can you show me an example of that in the
13 spec?

14 A. Yeah, I've given you several examples.
15 I mean --

16 Q. Okay. Fair enough.

17 A. So just look at 85.13, page 190 to
18 page 200. I've given you several citations to where
19 that particular claim element is being supported.
20 That's more than one example. There's several of
21 them.

22 Q. Okay. We'll get to see if the PTAB

1 agrees. This will be fun.

2 A. That's fantastic. I can't -- you
3 know, I can't speak to what the PTAB does. I can
4 only do what I'm technically trained to do.

5 Q. Let's take a look at -- well, similar
6 theme here, but going back to the discussion of
7 output neurons being instruction sets.

8 Could the output neuron of a neural
9 network that is an instruction set be an instruction
10 set for operating the second device and also be an
11 instruction set for operating the third device?

12 A. That -- that's possible.

13 Q. How is that possible?

14 A. Well, if the instruction set is move
15 forward and my second device is a sedan and my
16 third device is a sedan, they both move forward.
17 The instruction is move forward and my one device is
18 a sedan and the other one is an airplane, maybe it's
19 a different story. But, yes, instruction could
20 possibly be common to two devices.

21 Q. Okay. You may want to pick up the
22 motion to amend again. I'm going to direct you to

1 Claim 89 in the motion to amend, if I can find my
2 copy here. It's on page 4 of the Appendix A to the
3 motion to amend.

4 A. Okay. Claim 89. So this is a
5 substitute for Claim 56?

6 Q. That's right.

7 A. Do you have the page number from my
8 declaration somewhere?

9 Q. I do not, I'm sorry. But I'm not
10 going to be asking you about support here. So maybe
11 you won't need it, but if you do, we can take time
12 to find it.

13 So Claim 89 talks about a
14 third device. Do you see that?

15 A. Give me one moment, please.

16 Q. Sure.

17 A. Okay.

18 Q. And you see in 89.1, it uses the word
19 a third device? It's at the end of 89.1.

20 A. Yes.

21 Q. And you see from the 89 preamble, that
22 this is the first device of Claim 86?

1 A. Yes.

2 Q. And then if you turn back a page to
3 Claim 86, you see in the 86 preamble that Claim 86
4 is the first device of Claim 85.

5 Do you see that?

6 A. Yes.

7 Q. And we talked previously that Claim 85
8 already discusses a third device; right?

9 A. Yes.

10 Q. And so my question to you, for
11 Claim 89, is the third device described there and
12 claimed there the same as the third device from
13 Claim 85, or is that a different device?

14 A. Well, Claim 89 is dependent from
15 Claim 86. So it is depending from Claim 86, which
16 depends from Claim 85.

17 Q. And with that understanding, is the
18 third device described or claimed in Claim 89
19 different from the third device that is claimed in
20 Claim 85?

21 A. I mean, it could potentially be, but
22 it's the same, "a" third device, versus in Claim 85

1 it's referring to it as "the" third device.

2 I mean, I'm not a patent attorney. So
3 the language of the patents is something I think
4 that's more for patent attorneys to -- what I
5 provide is the support technically for that language
6 in this classification. But this is referring to
7 "a" third device versus in 85 it's talking about
8 "the" third device.

9 Q. As a person of ordinary skill in the
10 art reading these claims, would that person of
11 ordinary skill in the art understand the
12 third device in Claim 89 to be the same third device
13 from Claim 85 or a different device?

14 A. Well, a third device. So they would
15 basically understand it as a third device, a
16 third device. Because if you look at Claim 85, it
17 says it's operating a second device on 85.1. And
18 then it refers to it as the second device, and then
19 that second device later in 85.7, et cetera.

20 So like you see in 85.14, it's
21 operating a third device, and then it refers to it
22 as the third device that is discussed in the Claim

1 Element 85.14. So a third device, and then that
2 third device. So it's referring to that a
3 third device. So the third device would be the a
4 third device.

5 Q. So it's your opinion that the third
6 device from Claim 89 is the same third device from
7 Claim 85?

8 A. Whichever -- whatever is the a
9 third device would be the third device that's being
10 referenced.

11 Q. So you think the a third device in
12 Claim 89 is the same third device from Claim 85; is
13 that right?

14 MR. JAIRAM: Objection, asked and
15 answered.

16 THE WITNESS: So the a third device
17 that's referring to -- like, 85.14 says, for
18 operating a third device. And then it refers
19 to that third device later on in that same
20 claim element. So that third device is
21 referring to a third device, whatever the a
22 third device is.

1 And in 89, it's saying for operating a
2 third device and then referring to the
3 third device of that a third device. So the
4 person reading this would understand the
5 third device referring to whatever the a
6 third device happened to be.

7 BY MR. COLVIN:

8 Q. Let me ask you that same general
9 series of questions for Claim 90.

10 A. 90?

11 Q. 9-0.

12 A. Okay.

13 Q. You'll see, again, that Claim 90
14 depends from Claim 86.

15 A. Correct.

16 Q. And then in 90.1, we again have
17 operating a third device.

18 You see that?

19 A. Yes.

20 Q. And so just to close the loop, do you
21 believe that the third device claimed in Claim 90 is
22 the same third device claimed in Claim 86 -- claimed

1 in Claim 85?

2 A. The a third device, whatever the a
3 third device is, that's what's claimed. So Claim 90
4 just adds the limitation where the one or more
5 inputs are further correlated with another one or
6 more instruction sets. And this one has to do,
7 obviously, with Claim 57, for operating a
8 third device, so whatever the a third device
9 happened to be.

10 Q. So the third device in Claim 90 and in
11 Claim 85 is the same; right?

12 A. Whatever a third device happens to be.
13 So when you read the claim, whenever you get to a
14 third device, that's what's claimed, the a third --
15 whatever the a third device happens to be.

16 MR. COLVIN: We've been going for
17 about an hour here. I think it's lunchtime.
18 Let's take a break.

19 THE REPORTER: We're off the record.

20 (Luncheon recess from the record.)

21

22

1 A F T E R N O O N S E S S I O N

2 (1:32 p.m.)

3 THE REPORTER: We're back on the
4 record.

5 DR. ELI SABER

6 having been previously sworn, resumed the
7 stand and testified further as follows:

8 EXAMINATION (Cont'd.)

9 BY MR. COLVIN:

10 Q. Sir, let me get you to turn to
11 pages 192 and 193 in your declaration.

12 A. Yes.

13 Q. And I want to ask you about the
14 excerpt that you have from the '991 application
15 going from 192 to 193.

16 A. Yes, sir.

17 Q. And if you look -- one, two, three,
18 four, five -- six lines down on page 193, you'll
19 see, "Connections" --

20 A. Yes.

21 Q. -- "853 similar to that of a brain."

22 A. Yes.

1 Q. And if you go up just a little bit
2 from that, it says, may include network of Nodes
3 (also referred to as neurons, et cetera) and
4 Connections 853 similar to that of a brain.

5 You see that?

6 A. Yes.

7 Q. How are nodes and connections similar
8 to that of a brain?

9 A. Well, you're kind of opening a
10 Pandora's box here.

11 Q. Well, I didn't open it. The patent
12 opened it.

13 A. So neural networks, obviously, they're
14 referred to as artificial neural networks, but the
15 premise behind them is, you know, we have to try to
16 create this connectivity like what a human brain
17 would have in terms of connections and whatever. So
18 we make these connections in a sense.

19 So this is kind of a language like you
20 would see in a book on neural nets or, you know,
21 like when I teach a course on neural net, we'll
22 start to talk about, you know, here are what

1 potentially synaptic connections might be, and then
2 the artificial neural networks would try to mimic
3 them.

4 Now, it's not obviously very well
5 understood exactly how the connections in the brains
6 are, you know, but that's the idea behind it, is
7 we're trying to make these interconnections between
8 all these different nodes so they are all
9 essentially connected and talking to each other.

10 Q. Is it like the nodes of a neural net
11 are like the neurons in the brain, and the
12 connections between the nodes and the neural net are
13 like the synapsis in the brain?

14 A. Well, I hate to make these analogies.
15 Because, obviously, I'm not a brain expert, and I
16 wouldn't call myself a neurosurgeon. I'm not a
17 brain expert and don't know how exactly how the
18 brain connections are.

19 But the neurons in a neural network
20 are supposed to mimic, in a sense, neurons in the
21 brain. And the connections are supposed to have
22 these connections. And then, obviously, we have

1 activation functions to create the nonlinearities,
2 et cetera.

3 Q. And you referenced synopsis earlier.
4 Are those what people in this field generally think
5 of as the connections between the neurons?

6 A. I mean, generally speaking. But, I
7 mean, typically for artificial neural networks, the
8 connections between the neurons is what we refer to
9 as the connections. So a feed-forward neural
10 network or a fully-connected neural network would
11 have basically a neuron from layer L minus 1
12 connected to all the neurons in layer L and
13 et cetera.

14 Q. And just to provide perhaps an
15 illustration for these different layers, if we look
16 at model A, is layer one on the left -- excuse me,
17 model A of Figure 17 that we've previously been
18 looking at, would layer one be on the left, layer
19 two be in the middle, and layer three be on the
20 right; or is there some other way to think about the
21 layers?

22 A. No, that's typically how we would

1 index them, where layer one would be the input
2 layer, and layers two through whatever would be the
3 hidden layers. And then the final layer on the end,
4 let's call that layer capital L would be your output
5 layer.

6 Q. Okay.

7 A. So you have a set of hidden layers in
8 the middle with a variety of neurons per layer,
9 et cetera. You really should take my course on
10 advanced neural nets.

11 Q. That would be fun to take that course
12 and record everything and then have another one of
13 these depositions and really drill down.

14 A. Yes. Yes. You'll be a lot -- I mean,
15 you'll be a lot well-tuned with the terminology. So
16 you can ask even harder questions.

17 Q. Yeah, you're assuming that I haven't
18 taken a bunch of courses in neural networks.

19 So the -- I've seen neural networks --
20 I'm going to call -- I'm going to say graphical
21 representations of neural networks kind of like what
22 we see in Figure 17 in the field.

1 A. Yes.

2 Q. And the graphical representations of
3 these neural networks usually include nodes and
4 connections between them and -- well, let me just
5 stop there.

6 You agree with that; right?

7 MR. JAIRAM: Objection to form.

8 THE WITNESS: I mean, generically
9 speaking, I mean, you're so generalizing,
10 it's very hard to figure out what you're
11 talking about. Like, for instance, CNNs have
12 a slightly different look to them than
13 fully-connected neural network. There are
14 different diagrams that would try to explain
15 the structure.

16 BY MR. COLVIN:

17 Q. Yeah. And the diagrams that try to
18 explain the structure, they generally will show
19 nodes, perhaps layers, and connections between the
20 nodes; is that right?

21 A. Depending on the network. Like a CNN
22 would show something different. You know, a CNN

1 would show, for instance -- the layers are different
2 because you're looking at two-dimensional frames of
3 images. So the different layers, the pooling looks
4 different.

5 So it depends on the network. But the
6 idea is the diagram illustrates -- gives the reader
7 the ability to kind of get a visual comprehension of
8 the network.

9 Q. Fair to say it tries to illustrate the
10 architecture of the network?

11 Do you agree with that word?

12 MR. JAIRAM: Objection to form.

13 THE WITNESS: I mean, that's the idea.
14 You try to illustrate in a sense the -- you
15 know, how the network connectivity is set up
16 or -- but it's obviously -- I wouldn't say
17 it's really an architecture because there may
18 be other things that are not shown in that
19 dia- -- I would have to see the diagram to
20 really be able to comment. I mean, you're
21 asking a very general question.

22

1 BY MR. COLVIN:

2 Q. And I've heard the term "weights" used
3 in relation to a neural network. What are the
4 weights of a neural network?

5 A. I think -- I'm sure you're very well
6 familiar with that term, but weights are typically
7 the values that you may put on a connection between
8 node I from layer L minus 1 to node J in layer L.
9 So you might put a weight on that, .2, .3, or
10 whatever.

11 Those are typically -- you know, there
12 are some other ways to do it, but this is typically
13 the more general way of doing it, or the more common
14 way.

15 Q. Now, if we look at the general neural
16 net architectures shown in Figure 17, I see nodes
17 and connections, but I don't see weights.

18 Are there weights shown in Figure 17?

19 A. Well, typically, when you show the
20 diagrams, some people will show a weight on each
21 line. Some people don't.

22 Q. Okay.

1 A. But it's understood that the weights
2 are up -- you know, I would say understood that the
3 weights are part of the connection. So I have a
4 neuron I in layer L minus 1 to neuron J in layer L,
5 there's a weight on that connection, let's call it
6 W_{IJ}. So that weight would provide some of some
7 weighting to this connection between those two
8 neurons.

9 Typically -- I mean, if you start
10 putting the weights, there would be so many of them
11 that the diagram -- like, if you were to add all the
12 weights here, this complicates the diagram a lot.
13 But that's the understanding.

14 Q. And is it right that you could have
15 the same architecture of a neural network -- in
16 other words, the same neurons and the same
17 connections, but have different weights for
18 different models that run on that architecture?

19 A. Obviously, it's connected to the
20 training that you have done. So if I train it on
21 dataset A, I'll have a certain set of weights. You
22 bring it dataset B, you might end up with a

1 different set of weights or a small change. It
2 depends on how well dataset A and dataset B, how
3 intersecting they are.

4 Ideally speaking, if they're so highly
5 intersecting that everything in dataset A is in
6 dataset B and vice versa, ideally speaking, you
7 could get the same weight or a very, very close
8 version.

9 But it also depends a lot on the
10 training, the way you trained it, how -- how you
11 selected the many batches, how you set the learning
12 rates, schedule rate -- there's a lot of dependency.
13 That's why it takes a lot of time sometimes to train
14 it.

15 Q. Let's take a look at the Buibas
16 reference. This is going to be one of the exhibits
17 I uploaded previously.

18 A. Yeah, let me see if I can find it.

19 Q. It's the Tesla 1005 exhibit.

20 A. Yep. So this is Tesla 1005; correct?

21 Q. Yes, sir.

22 A. All right. I am opening that now as

1 we speak.

2 Q. Okay. And you've studied this Buibas
3 reference; right, sir?

4 A. Yes, I have.

5 Q. I want you to turn to paragraph 203.

6 A. 203.

7 Q. That's right.

8 A. Of my declaration?

9 Q. Oh, no, I'm sorry. Paragraph 203 of
10 the Buibas reference.

11 A. Oh, okay. Sounds like --

12 Q. This is good.

13 With clarification, it was going to be
14 difficult for you and I to get on the same page
15 looking at different paragraphs.

16 A. Yes, what about it?

17 Q. So Buibas paragraph 203 talks about
18 the brain image serves as a spatial mapping (in a
19 simulated --

20 A. Yes.

21 Q. -- space) of the neurons and synapses
22 of an artificial neural network; right?

1 A. That's the first sentence, yes.

2 Q. What's included in a brain image?

3 A. Well, this is a great question. If
4 you look at -- well, first of all, if you look at
5 that same paragraph, you see that next sentence in
6 the paragraph?

7 Q. I do.

8 A. The next sentence says, The brain
9 image is expressed as a sparse matrix, and
10 open-close paren, allows for empty space, et cetera.

11 And if you back up a couple of pages
12 in that same Buibas, paragraph 179. You see that?

13 Q. I do.

14 A. The very last sentence on the left
15 column, do you see where it says, may be used to
16 load active, quote-unquote, brain images?

17 Q. I do.

18 A. And it says, e.g., synaptic weight
19 data configurations of profile. Do you see that?

20 Q. I do.

21 A. So that's what the brain image is
22 described in Buibas. So it's -- and I discuss that

1 extensively in my declaration in various places.

2 Q. Turning back to paragraph 203, what do
3 you understand the words, "The brain image serves as
4 a spatial mapping of the neurons and synapsis" to
5 mean?

6 A. Well, it describes it in the next
7 paragraph. The brain image is that set of weights.
8 So those weights provide the connection. You know,
9 between neuron I and neuron J, there's a weight
10 there. So it provides that, essentially,
11 description. But that brain image is essentially
12 those weights that we've been talking about, as I
13 pointed you to.

14 Q. Is the brain image, does it also
15 include information about the number, location, and
16 connection between nodes? Sorry, that didn't make
17 any sense. Let me ask that again.

18 A. That's what I was wondering, exactly.

19 Q. Does the brain image -- let's do these
20 one at a time.

21 Does the brain image contain
22 information about the number of neurons in the

1 neural net?

2 A. Well, it -- the brain image contains
3 the weights. So if you have a weight between neuron
4 I that neuron J, you know that weight is between
5 neuron I and neuron J. So it contains the weights
6 as I describe -- so if you look to my paragraph 65
7 of my declaration -- by the way, I do need to
8 mention since you haven't asked, but I'll mention
9 that just to be sure for the record.

10 There is a typo on paragraph 90 of my
11 declaration, and I want to be crystal clear about
12 that. So in paragraph 90, page 41, and the fifth
13 sentence from the bottom of paragraph 90, where it
14 says, "Claim 56 is straightforward," it should say,
15 "Claim 56 is not straightforward or unusually
16 simple."

17 So let me repeat that for the record.
18 So paragraph 90, page 41, five lines from the bottom
19 of paragraph 90, there is a sentence that says,
20 "Claim 56 is straightforward." It should say, "is
21 not straightforward or unusually simple to a POSA."

22 So that's an important error that I

1 would like to point out and make sure it's fixed on
2 the record.

3 Q. Okay. Let me ask my question again.

4 A. Yeah, please, go ahead.

5 Q. Does the brain image contain
6 information about the number of neurons in the
7 neural net?

8 A. So as you take a look at my
9 declaration, paragraph 65, you see it's talking
10 about Figure 4, and basically disclosing network
11 weight update. So you can see Figure 4 kind of
12 looks like a vector, right. It's kind of a vector
13 of data.

14 So it's referring to that figure and
15 talking about, obviously, these weights and the
16 merge of these weights. And that's disclosed and
17 discussed extensively in Buibas, starting on
18 paragraph 94.

19 You can see that section in Buibas
20 that says, network merge. That's discussing exactly
21 how these weights -- what are they and how they are
22 merged from parent A and parent B to child, say, C.

1 So the brain image is essentially the set of
2 weights.

3 Q. Does the brain image contain
4 information about the number of neurons in the
5 neural net?

6 A. Well, it contains the set of weights.
7 So if you have a weight, you know this weight is
8 between this neuron and that neuron. Otherwise, you
9 don't know where the weight belongs to. But the
10 brain image is the set of weights, and that's why I
11 think I want to make sure it's clear.

12 Q. Yeah, so I'll even bake that into my
13 question so that it's there.

14 I understand your opinion to be that
15 the brain image contains the set of weights for the
16 neural network. Does the brain image also include
17 the number of neurons in the neural network?

18 A. I think I've already answered that,
19 but I'm happy to answer it again.

20 So if I have a weight in a weight,
21 that weight has to tell me which neuron it starts
22 from and that neuron it goes to, right. So I would

1 need to know that this weight belongs to that
2 connection.

3 So each weight is going to define the
4 connections among the layers. So by knowing the
5 weights, you would know, obviously, where to put the
6 weight in the neural network.

7 Q. I see.

8 So by having the weights --

9 A. Matrix.

10 Q. By having the weight matrix, you can
11 determine the number of neural networks -- excuse
12 me, you can determine the number of neurons that are
13 in the neural network?

14 A. Well, you would need to know what the
15 weight belongs to. So if you had a weight matrix,
16 for instance, you would know -- because you need a
17 weight matrix at every layer. Following me? You
18 need a weight matrix -- like I said, you should take
19 my course on advanced neural networks.

20 You need a weight matrix at every
21 layer to be able to transition from -- in a
22 feed-forward manner from layer L to layer L plus 1.

1 To compute the outputs -- to compute the outputs on
2 layer L plus 1, you would need the weight matrix,
3 and you would need the outputs of layer L.

4 So the weight matrix transforms the
5 outputs of layer L, determines -- plus the
6 activation determines the output of layer L plus 1.

7 Q. So if you have the weight matrix, you
8 can determine how many nodes are in the neural
9 network?

10 A. You would know how many nodes are in a
11 given layer, input/output.

12 Q. Okay. So if you --

13 A. So if I gave you weight matrix for
14 layer 5, you would know that it has so many rows and
15 so many columns. And all are numbers, and there are
16 weights. You would know that this weight matrix
17 connects layer 4 to layer 5. So you would know how
18 many weights are there.

19 Q. So if you have the weight matrix for
20 the entire neural network, you can know how many
21 nodes there are in the neural network?

22 A. Yes, I mean, there's a weight matrix

1 every -- between layer to layer. So layer 1 to
2 layer 2, that would be a weight matrix. Layer 2 to
3 layer 3, there would be a weight matrix, assuming
4 each layer has more than one neuron.

5 If it just has one neuron, then you
6 have a weight vector. But if it has more than one
7 neuron, you would have a weight matrix. So as you
8 go from layer 1 to layer 2, you apply weight
9 matrix 2. As you go from layer 2 to layer 3, you
10 would apply weight matrix 3, and et cetera. That's
11 what's known as feed forward.

12 (The reporter seeks clarification.)

13 THE WITNESS: Feed forward. Like
14 fast-forward, but feed forward.

15 BY MR. COLVIN:

16 Q. What information would a person need
17 to know other than the weight matrix to understand
18 the architecture of a feed forward neural network?

19 A. Well, you would need to know what
20 inputs you have been providing. You need to know
21 what activation functions are going to be at every
22 neuron, because they could be different.

1 You need to know if the output layer
2 is set of instruction sets, do you have a soft max
3 setup there, is it a probability setup, is it one of
4 or could be multiple outputs at the same time, is it
5 the hot coating or not. I mean, there's all the
6 things you need to know.

7 So if I just gave you a weight matrix,
8 you can't create a neural network from it. You need
9 more than that.

10 Q. But if you have the weight matrix, you
11 can understand how many neurons are at each level
12 and the connections between those neurons; right?

13 A. You understand the weights between --
14 if I have the weight matrix for layer L, I would
15 understand the weights or the connections between
16 layer L minus 1 and layer L. That's all it says.

17 Q. Right. But included in that would be
18 understanding how many neurons are at L minus 1 and
19 how many neurons are at L; right?

20 A. Correct, because the rows and columns
21 of the weight matrix would tell you that.

22 Q. If you look at Figure 1 --

1 A. Of?

2 Q. Of Buibas.

3 A. Yes.

4 Q. How many layers do you see in that
5 neural network architecture?

6 A. Well, again, I mean, those are
7 illustrations. It's hard to say exactly. But there
8 is a description of Figure 1 in Buibas, starting at
9 paragraph 74. Because it's not drawn exactly like
10 in a layer setup, like model A that we've been
11 talking about over there.

12 You see the neurons are kind of like a
13 little bit not quite aligned. So there's a
14 description of that figure starting at paragraph 74.

15 Q. Okay. You didn't answer my question,
16 sir. Let me ask it again.

17 How many layers do you see in the
18 neural network architecture shown in Figure 1 of
19 Buibas?

20 A. It's hard to tell, because you don't
21 know -- if you look at -- the nodes are
22 numbered 102-1, there are inputs coming to those.

1 So we don't know if those are coming from another
2 layer. And then if you look towards the output, you
3 see a dot, dot, dot there. So it's hard to say how
4 many layers that is.

5 Q. Okay.

6 A. But there's a description of it
7 starting on paragraph 74, because they're talking
8 about basically the neurons and the connections
9 between them.

10 Q. Could we assume for the purposes of
11 discussion that there are five layers in Figure 1 of
12 Buibas?

13 A. Well, that assumption would not be
14 correct, because you see there's a dot, dot, dot
15 there. So we don't know -- they're, you know,
16 indicating that could be 50 layers, but there are --
17 basically, it's showing a series of layers. We
18 don't know the number because it doesn't state it
19 exactly, but it's meant to be general in the way
20 they've drawn the figure.

21 Q. So as shown, we see five but there's
22 some dots there, so there could be more. And we

1 don't know what's before, and we don't know what's
2 after; right?

3 A. Correct.

4 Q. Okay.

5 A. I mean, again, the figure wasn't meant
6 to show you how many layers. It was just meant to
7 illustrate the -- you know, presynaptic, pulse
8 synaptic connection and that type of thing.

9 Q. If you look at Figure 1 of Buibas, you
10 see the nodes labeled 102_1 on the left-hand side?

11 A. Yes.

12 Q. And then there are other nodes labeled
13 102_2.

14 Do you see that?

15 A. Yes.

16 Q. And other nodes labeled 102_3?

17 A. I see that.

18 Q. What's your understanding of what that
19 underscore 1, 2, and 3 means?

20 A. They don't exactly say what it is, but
21 the understanding is, like, you've connected -- for
22 instance, you see where it refers to -- like,

1 units 102 in Figure 1 -- so if you look at
2 paragraph 74, you see where they're talking about a
3 typical artificial neural network, such as network
4 100 you're talking about, and it includes a
5 plurality of units or nodes 102.

6 So you see those 102s, they're all
7 basically labeled underscore 1, 2, 3, 4, 5. And a
8 given unit in 102 may receive input by a connection
9 104. So now you see it's pointing to connection
10 104, which is in the middle of the diagram.

11 And you have a 102 that receives it,
12 which obviously would be a later layer than the one
13 that's submitted. So the intent is to show you
14 different layers, but they don't explicitly state
15 that. But that's the intent.

16 Q. Okay. If we had the weights -- I
17 should say if we had the weight matrix for this
18 neural network shown in Figure 1, it would show that
19 in -- what it's depicting as the first layer, there
20 are two nodes. And what it's depicting as the
21 second layer, there are four nodes.

22 And it would depict the relative

1 connection between the nodes in layer 1 and the
2 nodes in layer 2; right?

3 A. So the weight matrix would obviously
4 give you -- would give you the weights of the
5 connections between a layer and the next layer.
6 Going from layer L to layer L plus 1, I have the set
7 of weight matrix or vector, depending on how many
8 neurons are there. I would see the weights.

9 I wouldn't know anything about the
10 activations. I wouldn't know anything about the
11 biases. All I know is I just see the weights. So
12 the weight matrix just provides the weights.

13 Q. That wasn't my question. Let me ask
14 it again.

15 If you have the weight matrix for the
16 neural network shown in Figure 1 of Buibas, you
17 could understand that there are two nodes in the
18 first layer, four nodes in the second layer, and all
19 of the connections between layers 1 and layers 2;
20 right?

21 A. So if I had the weight matrix between
22 layer 1 and layer 2, I would understand the weights

1 between layer 1 and layer 2. And if there are two
2 neurons in 1 and 4 in 2, I would know. But I
3 wouldn't know anything about the biases of the
4 neurons or the activation functions or anything
5 else.

6 Q. Okay.

7 A. Whether there's any feedback or
8 whatever, I wouldn't know that. I would just know
9 the weights between them.

10 Q. Let me ask you about a sentence in
11 paragraph 202.

12 A. Of Buibas?

13 Q. Of Buibas.

14 A. Yes. I think we already talked about
15 that, no?

16 Q. No, we talked about 203. I'm asking
17 you about 202.

18 A. All right. Let's go look.

19 Q. Are you there?

20 A. I'm getting there.

21 Q. Sure.

22 A. Yes, what about it.

1 Q. Just about the middle of that
2 paragraph, there's a sentence that says, "The
3 training acts on the brain image of the robotic
4 device."

5 You see that?

6 A. Yeah, I do. And you read it
7 correctly.

8 Q. How does training act on a brain
9 image?

10 A. So I mean, generally speaking, when
11 you're doing training, you're updating the weights.

12 Q. Are you just updating the weights?

13 A. Well, there's kind of a generic
14 description in my declaration. If you go to
15 paragraph 77 of my declaration, it's kind of a
16 generic description there. So you see that in that
17 paragraph, it starts by, Further additional
18 instruction sets, et cetera.

19 And then that it gets into -- so
20 towards the end of page 33 into page 34, this is
21 because -- this is so because during retraining,
22 proper weights for correlation connections are

1 calculated exactly adjusted by back propagation.
2 And it gives you a little bit of a description --
3 kind of a generic description of back propagation.
4 This is just above paragraph 78.

5 Q. Okay. That was not responsive to my
6 question. Let me ask it again.

7 During training, is it just the
8 weights that are updated in a brain image?

9 MR. JAIRAM: Objection to form.

10 THE WITNESS: I would have to know
11 specifically what type of training you're
12 talking about exactly.

13 BY MR. COLVIN:

14 Q. And that's because in some training,
15 it may just be the weights that are updated, but in
16 other training, other things could be updated;
17 right?

18 A. Well, I mean, that's in a very generic
19 statement and it's hard to answer, too, but we're
20 talking here about -- specifically about Buibas and
21 the brain image of Buibas. So let's just be
22 specific about that and not --

1 Q. Okay. Great.

2 (Cross talk.)

3 THE WITNESS: So Buibas brain image is
4 essentially that set of weights that Buibas
5 is talking about. And Buibas talks about
6 merging that and creating childs from parents
7 of that and updating that, but it's really a
8 set of weights. Let's not venture into
9 something else. This is one sentence you're
10 pointing here, and you're taking out of
11 context.

12 BY MR. COLVIN:

13 Q. Well, I'm just asking you a question
14 about the sentence, sir. You put whatever context
15 on it you want.

16 "The training acts on the brain image
17 of the robotic device." That's the sentence in
18 Buibas, right, that we were looking at?

19 A. Yes.

20 Q. And my question is: Does that
21 training only update the weights, or could that
22 training also update other things?

1 A. Well, the brain -- as we already
2 discussed this -- I think I've already answered that
3 question, but I'm more than happy to answer it
4 again. The brain image is the set of weights in
5 Buibas. Somebody else may have something else.

6 In Buibas, the brain image is the set
7 of weights. So when you are training the brain
8 image, you are updating those weights, as Buibas
9 discusses in multiple spots in his -- so that one
10 sentence is referring to training, as you can see
11 when you go back to -- go to Buibas paragraph 79.

12 You see the start of that section
13 says, Network training. And if you read through
14 that section, obviously it's referring to the
15 robotic brain to start. It's talking about
16 different weights, and it gives you a formula there.

17 And -- and then gets into some of the
18 details about the robotic brain. And then it gets
19 into -- if you look at paragraph 89. So if you read
20 through that section, it obviously defines the
21 things first. When you get to paragraph 89, you see
22 where it says, the efficacy vector θ may

1 comprise a vector of trained network connections
2 weights, capital W.

3 And then you get into network
4 transformations, network updates. So you see, and
5 then it gets -- so if you read paragraphs 90 to 93,
6 and it's talking about weights, weight vectors,
7 weights, and weight connections and whatever, but
8 it's strictly talking about weights. It doesn't
9 have anything else that it's talking about besides
10 that.

11 And if you go to -- if you go to
12 network merges, 94 to 98, it's still talking about
13 weights. And if you look at the two equations, 3
14 and 4, it's talking about the merging of weights
15 with "ors" and "ands." So the Buibas brain image is
16 talking about weights. That's it.

17 Q. Okay. Turn to paragraph 88 that you
18 mentioned a moment ago.

19 A. Yes, sir.

20 Q. Second sentence in paragraph 88 starts
21 with, "The network may be capable of
22 self-organization (e.g. the creation (destruction)

1 of links to denote highly (sparsely) used
2 pathways)."

3 You see that?

4 A. Yes.

5 Q. What is self-organization?

6 A. Well, you may add a neuron --

7 MR. JAIRAM: Objection to form.

8 THE WITNESS: I mean, it doesn't
9 describe itself there what that exactly is,
10 but it's saying, e.g. creation (destruction).
11 So maybe you add another neuron or you take a
12 neuron away or you may add a layer.

13 I mean, there might be some things
14 that -- you know, they don't discuss the
15 specifics of that in this particular -- you
16 know, in Buibas.

17 A brain image is discussed
18 extensively, as you see here I pointed you
19 to, and strictly about weights.

20 BY MR. COLVIN:

21 Q. Paragraph 88 is talking about that the
22 network may be capable of self-organization as a

1 result of the training; right?

2 A. I mean, that's -- that's just one
3 sentence there that I think obviously you're taking
4 out of context, but you have to read the rest of the
5 context to see what is this training entails. So
6 it's not just the one sentence. So that's kind of a
7 generic description, but when you get into the
8 details, you see exactly what it's talking about.

9 Q. In fact, the first sentence of
10 paragraph 88 says that, "In various implementations
11 consistent with the present disclosure, the robotic
12 brain is configured to be receptive to training."

13 Do you see that?

14 A. Yes. But that's, again, a very
15 generic sentence that doesn't mean -- that doesn't
16 give any specific technical detail.

17 Q. I see.

18 Let me point to you paragraph 20 --
19 205.

20 A. Yes.

21 Q. The first part of this paragraph says,
22 "The brain image is modified by training. Thus, the

1 robotic learning process is achieved by adding or
2 removing neurons, and/or generating new links
3 between neurons."

4 Do you see that?

5 A. Yes.

6 Q. What does that mean to you?

7 A. Well, again, you're mixing apples and
8 oranges here.

9 Q. I'm just reading two sentences that
10 are right next to each other, sir. What do those
11 mean to you?

12 A. I know, but you're -- what I'm saying
13 is you're picking two sentences and then trying to
14 say, Well, okay, these two sentences claim a
15 spaceship going to the moon and back. And what I'm
16 telling you is, you see where it says, The brain
17 image is modified by training?

18 When you go back to those sections I
19 just showed you, it discusses exactly how that
20 training is done. That sentence doesn't tell me
21 anything about the -- exactly how the training is
22 done. I have to go back and look and see how that's

1 done.

2 And the next sentence that you said is
3 the robotic learning process, that's different from
4 the brain image now, is achieved by adding or
5 removing neurons. I can understand that. You add a
6 neuron, you remove a neuron. But the brain -- the
7 robotic brain -- the brain image training is
8 described by those set of weights that we've been
9 talking about, and that part is described in detail.

10 Q. Do you think training is different
11 from the robotic learning process in Buibas?

12 A. Well, you have to obviously look at
13 the details. So what is being detailed there and
14 how it's done.

15 Q. Right. So my --

16 A. So it's --

17 Q. Yeah. So with all of those
18 understandings, is the robotic learning process in
19 Buibas different from the training, looking at the
20 two sentences in paragraph 205, those first two
21 sentences?

22 A. Yeah, but two sentences don't describe

1 what the technical details of what's going on. The
2 devil is in the details of what's going on. It's
3 not just in the two sentences that you just picked
4 out of, you know, a 20-some-page technical
5 specification.

6 So when I look at the training of the
7 brain image, all I see is a set of weights that are
8 being updated. That's what's described. That's
9 what's in the equations. That's what you see. The
10 equations even give you a weight, an "or", and a
11 weight; and a weight and an "and" and a weight.

12 It doesn't show any neurons there or
13 anything else. It's strictly talking about weights.
14 The equations are clear. That's more clear than the
15 one sentence that you're picking out.

16 Q. So when someone is trying to teach the
17 robot in Buibas how to do something, is it your
18 opinion that they have to do different steps of
19 training and then something else that is the robot
20 learning process?

21 A. Well, you would have to describe what
22 it is that you're doing. If you're telling me, I

1 have a learning process, that's nice. I would need
2 to look at the technical details. I mean,
3 otherwise, I could write a claim that says I have
4 learning process and then send that in as my claim,
5 and then there it is. It will read on everything in
6 the world today.

7 Q. Okay. So you don't know what the
8 robotic learning process of Buibas is; right?

9 A. No, I do know what that process. It's
10 described --

11 Q. Is that training?

12 A. It's described -- you know, the brain
13 image and how it is trained and how it's updated is
14 described very clearly in Buibas. You see -- if
15 you'll go to equation 3 on paragraph 97.

16 You see when you look there at that
17 equation, it says, W^A for
18 parent A, and W is a weight vector. It's not a
19 learning process. It's not some bunch of neurons.
20 It's a weight vector.

21 Or with the other W from parent B to
22 create W for the offspring, O-F-F. So the equations

1 are what describe the details more so than generic
2 sentences thrown here and there.

3 So Buibas describes this training, you
4 know, with the updates to the weights very
5 carefully. And you can see that from a variety of
6 his equations. You can look at equation 5. You see
7 in equation 6, he's basically adding the weights
8 with a random weight component.

9 And in equation -- or there's no
10 equation 6. It's not numbered, but the one below
11 paragraph 112 looks like he's averaging weights A
12 and B. So he's talking -- Buibas is talking about
13 weights when it's talking about the brain image. It
14 doesn't have anything else that's being discussed.

15 Q. Do you believe that Buibas discloses
16 training that adds or removes neurons?

17 A. It states that.

18 Q. Okay.

19 A. That sentence you just pointed to, it
20 says, The robotic learning process is achieved by
21 adding or removing neurons. It states that, which
22 is obviously not difficult to do, but it states

1 that.

2 But what it describes about the brain
3 image is the weights. So even if you added a
4 neuron -- so in the brain image, you just add
5 another row or column to your weight matrix,
6 depending on where you added the neuron in pre-layer
7 or the post-layer.

8 So adding the neuron doesn't make it
9 some big giant thing. So you add a neuron, you're
10 dealing with a brain image that has a set of
11 weights, and you're updating those weights. And
12 Buibas spent several pages discussing that.

13 Q. When updating -- or let me ask you a
14 general question about weights.

15 What happens if you have a weight of
16 zero?

17 A. Well, if you've done your training and
18 you end up with a weight of zero, that means that
19 connection is -- doesn't feed from the previous
20 layer to the next layer information.

21 Q. Okay.

22 A. So the neuron from the second layer --

1 (The reporter seeks clarification.)

2 THE WITNESS: The neuron from the
3 second layer doesn't rely on the neuron from
4 the previous layer, you know, given that
5 connection if the weight is zero.

6 BY MR. COLVIN:

7 Q. Let's take a look at paragraph 225 of
8 Buibas.

9 A. Yes.

10 Q. Let me know when you're there. You're
11 there now, sir?

12 A. I'm there at the paragraph, yes.

13 Q. So in that paragraph 225 on the
14 right-hand column, about, I don't know, six lines
15 down, seven lines down, there's a sentence that
16 begins users may also merge.

17 You see that?

18 A. I don't see no "merge," but I see
19 "augment." Are we talking about the same thing?
20 Oh, I see a revert -- a user may revert.

21 Are we talking paragraph 225; correct?

22 Q. 225. It spans the columns. It goes

1 up to second one.

2 A. I got it, yes.

3 Q. And then about -- one, two, three,
4 four, five, six -- seven lines down from the top --

5 A. Yes.

6 Q. -- there's a sentence that says,
7 "Users may also merge brain full images from the
8 options available in the Socialize menu."

9 Do you see that?

10 A. Yes.

11 Q. And then the next sentence says, "The
12 merging of brain images involves the combination of
13 one brain image with another brain image."

14 Do you see that?

15 A. Yes. You read that correctly.

16 Q. What does it mean for one brain image
17 to be merged with another brain image?

18 A. Go to paragraph 94, and it will
19 explain it to you exactly, Network merges. That's
20 the title of the section. And it tells you exactly
21 what it's doing and how it's done.

22 Q. Can you describe that to me in your

1 own words?

2 A. Yes. If you look at section --
3 paragraph 94, you see it says, in the first
4 sentence, it's got comprise network weight updates
5 comprising two or more sources also referred to --
6 referred herein to as merges.

7 Then you go to paragraph 95, you see
8 he's talking about an offspring network configured
9 (e.g., weight vector W) may be obtained using two
10 parent weight vectors 401 and 406, because this is
11 referring to Figure 4.

12 And then you see in the next
13 paragraph, it's talking about the merging and how
14 that's done. And then it provides you with
15 equation 3 and equation 4 where that merge can be
16 done with an "or" or an "and."

17 So it's describing the details of the
18 merge. I believe I address that in paragraph 71 in
19 my declaration.

20 Q. If you go back to paragraph 225. I
21 want ask you about another sentence there.

22 A. Sure, I'd be happy to.

1 Q. The last sentence of paragraph 225
2 says, "In some cases, a full brain image that is
3 incompatible with a given robotic device is made
4 compatible through one or more brain merges and/or
5 augmentations."

6 What does that mean?

7 A. Just what it says. So if I have a
8 brain image that has 15 weights and my robotic
9 device has 30 connections, I would add 15 more
10 weights so I can get to 30 weights.

11 Because, otherwise, the other
12 connections don't have any weights on them or have
13 numbers that are randomly chosen and then would
14 result in junk. So you're augmenting weights with
15 another set of weights or merging with another set
16 of weights to make it work.

17 Q. I guess I don't understand what you
18 mean by if you have an image that has 15 weights in
19 a robotic device that has 30 connections, you would
20 add 15 more weights.

21 A. So I have a brain image on robot 1,
22 right. Robot 1 has, let's say, one neuron on the

1 input and one neuron on the output. So there's only
2 one weight. I take that brain image and put it on
3 robot 2 that has two neurons on the input and three
4 neurons on the output. So that one has six weights.

5 So that one weight doesn't work for
6 all six of them. So I would have to augment that
7 with additional weights. I mean, that's why I keep
8 taking you to the section on network merges, because
9 you seem to want to skip the details technically and
10 just want to pick sentences, you know, here and
11 there that are generic and -- rather than look at
12 the technical details of what's being discussed.

13 And you see, I mean, Buibas clearly
14 discusses -- if you look at equation 3 and
15 equation 4, it's giving you the process of how to
16 create additional weights from prior weights using
17 "ands" and "ors."

18 Q. I guess what I may be viewing as an
19 inconsistency and maybe having troubling with is how
20 you can merge brain images and create additional
21 output nodes.

22 A. Well, I mean, he describes it there.

1 There are many ways of doing this. What Buibas
2 describes is one approach of doing it. You know,
3 Johnny could have done something else. But what
4 Buibas describes is how Buibas approaches the
5 merging of weights.

6 And there are, you know, equation 3,
7 equation 4, equation 5, where they add some
8 randomness to it. There's -- you know, those are
9 the options that Buibas has discussed in his patent.

10 MR. COLVIN: Okay. Let's take a
11 break.

12 THE REPORTER: We're off the record.

13 (Recess from the record.)

14 THE REPORTER: We're back on the
15 record.

16 MR. COLVIN: No further questions.
17 I'll pass the witness.

18 MR. JAIRAM: Let's take a ten-minute
19 break. Let's go off the record.

20 THE REPORTER: We're off the record.

21 (Recess from the record.)

22 THE REPORTER: We're back on the

1 record.

2 MR. JAIRAM: I do not have any
3 redirect questions. This deposition is over.

4 Off the record.

5 THE REPORTER: We're off the record.

6 (Examination concluded. The time is
7 2:55 p.m.)

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6 Certified Realtime Reporter, Registered Diplomat
7 Reporter, and Notary Public in and for the State of
8 New York, do hereby certify:

9 That I reported the taking of the
10 deposition of the witness, DR. ELI SABER,
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11 hour of 9:30 a.m.

12 That prior to being examined, the witness
was duly sworn by me to testify to the truth, the
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13 That I thereafter transcribed my said
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17 I further certify that I am not a relative
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18 parties, nor a relative or employee of any attorney
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19 financially interested in the action.

20 IN WITNESS WHEREOF, I have hereunto
set my signature this 7th day of April, 2025.

21



22

EILEEN MULVENNA, CSR/RMR/CRR

Page 186

1 Dr. Eli Saber, c/o

McKool Smith

2 1717 K Street, NW, Suite 1000

Washington, DC 20006

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4 Date of deposition: April 4, 2025

Deponent: Dr. Eli Saber

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A	addition 106:1	35:4 44:20	23:13 24:4 42:2	appropriate
a.m 1:17 2:5	additional 11:7	52:14,17,18	47:19 48:5	101:22 187:9
53:21,22	52:22 53:3	54:10 56:7	49:20 50:18	approximately
185:11	68:22 87:22	84:18,21 85:1	68:11 72:3,4	2:4
ability 127:10	115:4,5 165:17	85:13,16 101:5	73:16 121:6	April 1:16 2:4
145:7	182:7,16,20	114:20 116:5	136:15 154:18	185:10,20
able 14:16 18:5	address 23:1	132:22 133:1,3	168:2	186:4 187:5
19:20 20:14	180:18	amended 16:18	answers 187:10	188:10
21:9 23:7 24:7	addressed 22:21	70:9 71:7	187:13	architected 20:14
28:8 31:9 37:4	adds 138:4	amendment 53:8	antecedent 97:7	architecture
37:18 41:9	176:16	68:1,17,20 69:3	anticipates 75:8	145:10,17
49:17 59:6 66:3	adjust 12:9 130:6	69:9,12 83:8,16	anticipating	147:15,18
66:8 96:4	130:10	amendments	77:15	157:18 159:5
128:21 145:20	adjusted 166:1	61:21	anybody 54:7	159:18
155:21	administrative	analogies 141:14	anyway 9:4 10:10	architectures
above-titled 2:3	7:13	analyze 18:14	appeal 1:2 50:14	146:16
absent 186:21	advance 50:9	19:8,10 24:11	119:1	area 79:22
Absolutely 8:21	advanced 126:6	28:11	appear 80:5,6,13	arms 125:7
abstract 12:4,11	126:22 127:19	analyzed 21:18	appeared 97:13	arrive 81:2
12:13	143:10 155:19	56:2 69:7	APPEARING	arrived 8:4
access 126:16	advise 186:10	analyzes 123:17	1:15	arrows 57:12
accessed 126:15	advised 186:6	analyzing 60:2	Appendix 9:9,12	58:8
accurate 185:15	ago 8:5 169:18	91:2	9:14 133:2	art 25:5 26:8
achieved 172:1	agree 36:1 40:18	AND- 3:11	apples 172:7	32:13 34:21
173:4 176:20	41:13,14 56:12	and/or 38:13	applicable	45:6 46:3 48:11
acknowledge	60:20 61:3,15	39:5 77:16	186:13	49:12 56:10,19
187:6	80:8 100:7	78:11 82:10	application 10:21	63:18 67:3
act 91:1 165:8	104:16 105:3	130:6 172:2	55:11 56:1,1	72:21 74:12
action 2:3 185:18	115:8 119:19	181:4 186:9	57:1 58:19 59:5	95:4 135:10,11
185:19	125:11 144:6	ands 169:15	59:15 61:17	artificial 38:12
activation 23:6	145:11	182:17	62:5,18 63:13	39:8 76:15,18
80:17,20 101:9	agreement 96:4	answer 8:18 13:2	63:16 64:2,14	77:3,6,8,13,18
142:1 156:6	97:19	13:5 14:16 17:2	65:10 66:19	78:14 79:8
157:21 164:4	agrees 132:1	17:14 18:20	67:9 69:1,5	140:14 141:2
activations 84:7	ahead 70:14	19:11,13,21	73:9,12 75:15	142:7 149:22
128:4 163:10	153:4	20:14,22 21:10	81:18 83:19	162:3
active 150:16	AI 77:2 84:5	22:1,12 23:18	121:3 139:14	artificially 39:4
acts 165:3 167:16	airplane 132:18	24:5 26:5 35:17	applications 55:7	42:6 78:10 82:9
add 147:11 170:6	ajairam@mck...	37:4,18 42:3	56:6 57:2	Arvind 4:3 71:16
170:11,12	4:9	47:20 49:7	apply 113:21	asked 27:17 46:1
173:5 177:4,9	algorithm 128:13	50:10 56:22	157:8,10	68:2 126:17,18
181:9,20 183:7	128:19	59:6 66:8 68:12	applying 70:19	136:14 152:8
added 53:4 177:3	aligned 159:13	73:17 112:15	appreciate	asking 11:11
177:6	allowed 186:13	121:7 154:19	104:10	14:9 16:2,4,12
adding 172:1	allows 150:10	159:15 166:19	approach 183:2	16:20 17:1 18:7
173:4 176:7,21	amend 5:11 7:6,8	168:3	approaches	22:16 25:14,18
177:8	9:7,8 26:9 27:7	answered 19:4	183:4	25:19 26:11

27:12,15 28:16 30:20 31:13 32:5,15 34:3,3 35:1 36:8,15,21 36:22 37:8 38:3 39:12 40:15 43:17 44:7,10 45:1,10 46:6,22 48:16,17 49:15 50:7 51:12 52:11 54:9 57:21 66:5 67:13 70:5 75:3 111:11 124:10 124:13 133:10 145:21 164:16 167:13 aspects 89:12 assume 160:10 assuming 143:17 157:3 assumption 99:7 160:13 attached 187:11 attorney 47:6 69:8 70:6 91:16 96:21 135:2 185:17,18 attorneys 3:4 4:4 47:8 86:11 135:4 augment 178:19 182:6 augmentations 181:5 augmenting 181:14 authorized 71:12 autonomous 1:7 39:6 78:12 82:6 82:11 113:22 186:3 187:4 188:8 available 179:8 Avenue 3:15 averaging 176:11 aware 19:16 20:4	22:4,18 25:9 27:8,19 B B 5:7 86:22 88:4 92:10 106:16 147:22 148:2,6 153:22 175:21 176:12 back 9:9 32:22 35:3 50:12 53:14 54:1 66:7 66:10 86:1,2,14 93:9 98:9,12,17 114:17 127:20 128:2,11,12,19 129:19 130:1,5 130:12,16,17 132:6 134:2 139:3 150:11 151:2 166:1,3 168:11 172:15 172:18,22 180:20 183:14 183:22 backward 125:3 bad 43:22 Bahama 127:2 Bahamas 126:20 bake 154:12 base 11:22 based 44:13 67:6 74:20 baseline 48:1 112:19 basically 29:16 38:11 40:4,8 86:9 89:19 118:3 135:15 142:11 153:10 160:8,17 162:7 176:7 basis 97:7 batches 128:6 148:11 Bates 5:10,12,14 5:16,19 6:16,21	7:3,7 65:1 Bearing 92:18 beginning 105:18 begins 178:16 believe 22:13 24:3 32:2 39:12 40:15 43:14 44:15 47:19 49:1,20 50:18 52:12 66:19 68:9 71:13 121:6 137:21 176:15 180:18 belongs 154:9 155:1,15 best 59:7,9 62:4 62:13,15 67:8 68:15,18 69:2 biases 163:11 164:3 big 13:2 35:4 51:17 84:4 177:9 binders 8:3,4 bit 30:6 32:20 35:18 86:1 111:5 140:1 159:13 166:2 board 1:2 50:15 119:1 boat 122:13,13 122:20 book 140:20 bottom 78:6,8,20 78:21 80:9,10 89:6 152:13,18 box 140:10 187:9 brain 40:1 139:21 140:4,8 140:16 141:11 141:13,15,17 141:18,21 149:18 150:2,8 150:16,21 151:3,7,11,14 151:19,21 152:2 153:5	154:1,3,10,15 154:16 165:3,8 166:8,21 167:3 167:16 168:1,4 168:6,7,15,18 169:15 170:17 171:12,22 172:16 173:4,6 173:7,7 174:7 175:12 176:13 177:2,4,10 179:7,12,13,13 179:16,17 181:2,4,8,21 182:2,20 brains 141:5 break 7:18,19 53:12 54:5,7 98:1,4,6,15 138:18 183:11 183:19 breaks 7:20 bring 147:22 brought 63:6 Buibas 5:15 7:2,4 34:6,7 148:15 149:2,10,17 150:12,22 153:17,19 159:2,8,19 160:12 161:9 163:16 164:12 164:13 166:20 166:21 167:3,4 167:5,18 168:5 168:6,8,11 169:15 170:16 173:11,19 174:17 175:8 175:14 176:3 176:12,15 177:12 178:8 182:13 183:1,4 183:4,9 bunch 65:18 143:18 175:19	C C 3:1 4:1 87:1 88:4 153:22 c/o 186:1 calculated 166:1 call 97:7 117:13 130:18 141:16 143:4,20 147:5 186:15 called 119:16,17 calls 70:2 capable 122:17 169:21 170:22 capacity 127:10 capital 143:4 169:2 capturing 90:2,3 90:5 car 95:17,18 125:1,4,5 care 107:10 career 20:8,9 27:19 careful 49:8 carefully 41:9 42:21 47:12 176:5 cartoony 110:9 case 1:10 23:22 24:21 25:2,4,10 26:18,19 27:16 27:18 45:14 46:18 56:3 57:10,17 81:3 87:2 101:20 110:11,17 119:14 186:3 187:4 188:8 cases 181:2 cause 87:7 causes 86:22 88:3 caveat 112:14 cell 8:15 cells 13:21 certain 147:21 certainly 79:4 127:7
--	--	--	---	---

Certified 2:6,7 185:5,6 certify 185:8,17 cetera 12:16 13:21,21 14:3,3 40:3 41:6 42:7 50:5 53:4 56:22 63:4 74:2 77:5 77:17,17 78:15 78:15 80:19,21 84:9,9,16 89:17 89:18,18 90:5 95:14,15 101:9 101:10,10,10 124:5 135:19 140:3 142:2,13 143:9 150:10 157:10 165:18 chair 124:15 chance 19:10 25:22 82:20 125:19 change 89:17 90:22 127:9 128:4,5 148:1 188:11 changes 187:11 chart 83:13 check 127:22 187:9 child 153:22 childs 167:6 chosen 181:13 CHRISTOPH... 3:13 circumstance 78:12 81:20 82:11 85:8 88:6 88:11 89:3,20 89:22 90:9 91:4 91:6,13,17 95:13 96:6,7,12 97:9,11,15 124:4 circumstances 39:6 89:16 90:20,21	citation 83:6 84:4 citations 67:1,14 67:20 68:13,13 68:15,16,18,19 69:1,19 83:16 123:11 129:8 129:12 131:18 cite 78:20 cited 45:7 62:18 64:8,10,12 66:19 67:7,7,9 68:4,9 69:21 78:2 82:22 83:20 84:11 cites 83:3 claim 9:6,17,18 10:1,2,5,13,15 10:20 11:2,3 16:21 27:7 30:10,22 32:18 32:19 33:7,7,14 33:19,21 34:6,8 34:13,15,19 35:5,12 36:4,8 36:13,17 37:11 45:8,18 46:12 46:16 47:16 48:3 52:17 53:1 53:2,2,4,5,5 55:6 56:9 60:1 60:2,7,12,16 61:3,7,8,16 69:6,13 70:7,8 70:19 71:1,2,4 71:5,7,22 79:4 85:14 98:18 101:5,6 104:11 110:21 112:21 113:7 114:11 114:19 115:13 115:15 116:4 123:1,15,21 125:11 129:9 129:11 131:19 133:1,4,5,13,22 134:3,3,4,7,11 134:13,14,15	134:15,16,18 134:20,22 135:12,13,16 135:22 136:6,7 136:12,12,20 137:9,13,14,21 137:22 138:1,3 138:7,10,11,13 152:14,15,20 172:14 175:3,4 claimed 134:12 134:18,19 137:21,22,22 138:3,14 claiming 46:16 claims 16:18 45:22 46:2,14 46:17,19 47:2 48:9 49:9,12,13 51:10 52:9 54:10 65:14 135:10 clarification 105:16 129:21 149:13 157:12 178:1 classification 135:6 classifications 131:2 clause 14:10 clean 8:4 clear 105:18 152:11 154:11 174:14,14 clearly 175:14 182:13 close 137:20 148:7 CNN 144:21,22 CNNs 144:11 coating 158:5 code 86:5,13,20 86:20 87:2,5,5 87:17,21 90:8 99:5 coffee 124:16	collected 97:14 collection 13:20 13:21 14:1,20 83:3 89:8,9,10 92:15 column 13:14 29:2 38:11,18 39:2,18 40:5 41:4,5 42:4,14 50:3 51:5,6 52:4 60:6,12 82:18 130:2,4 150:15 177:5 178:14 columns 156:15 158:20 178:22 COLVIN 3:3 5:5 6:6,11,19 7:1,5 7:11,12 13:9 16:5,17 17:17 18:19 20:1,17 21:11 22:17 23:9,20 24:17 25:20 26:15 27:14 28:18 30:21 31:15 32:16 33:17 34:11 35:2 37:5 38:4 40:17 41:12,19 43:2 43:18 53:11,15 54:3 58:14 59:19 61:2 62:3 62:12 63:5 64:7 64:16 65:3 70:13 71:15,19 71:20 98:5,11 101:1 106:9 109:1 111:21 112:7 113:12 117:18 131:5 137:7 138:16 139:9 144:16 146:1 157:15 166:13 167:12 170:20 178:6 183:10,16	colvin@fr.com 3:9 combination 130:9 179:12 come 24:22 25:2 25:10 50:12 63:19 67:4 73:21 74:3,18 76:1 79:21 80:3 80:15 81:14 84:12,16 121:18,21 123:14 186:7 coming 159:22 160:1 commencing 2:4 185:10 comment 145:20 common 132:20 146:13 communicate 8:9 communication 8:14 compared 17:5 110:6 comparison 94:19 110:18 compatible 181:4 complete 185:15 186:6 187:10 187:12 completeness 65:7 complex 110:9 112:16 complicated 110:12 112:12 114:1 complicates 147:12 component 176:8 comprehension 145:7 comprise 91:19 93:11 169:1 180:4 comprises 77:14
---	--	---	---	---

89:7	147:17 155:4	convolution	56:13 62:6 63:4	185:18 186:9
comprising	158:12,15	130:21	66:16,20 67:5	186:12
123:22 180:5	160:8 163:5,19	convolutional	67:10 68:4,10	counts 130:6
computational	165:22 169:1,7	130:15	72:2,5,13,14	COUNTY 185:3
80:19,21 84:8	181:9,12,19	convulsional	73:7,15 74:10	couple 35:15
compute 156:1,1	connectivities	127:21	74:19 75:20	68:2 150:11
computer 93:20	23:7	coordinates	76:11 77:10	course 24:20
94:1,3,4,10	connectivity	93:17 94:10	78:4 83:21	126:5,9,22
concept 30:7	29:11,14 52:6	copies 7:22 119:8	101:12,18	127:18 140:21
111:18	72:12,15 73:2,4	copy 59:2 64:5	104:15 105:4,7	143:9,11
concluded 184:6	84:5 90:13	85:20 119:1,3	109:12 115:10	155:19
conclusion 70:3	140:16 145:15	133:2 186:8	115:18 116:7	courses 143:18
73:21 74:3,19	connects 156:17	Copying 186:21	121:14 125:13	court 53:16
76:2,4 79:21	consent 186:22	Copyright	125:17 126:3	185:5
80:3,15 84:17	consistent 171:11	186:20	138:5	create 91:3
configurations	constitute 69:22	cor- 33:15	correlating 29:20	125:22 128:21
150:19	construction	correct 9:19	57:3 72:10 82:5	140:16 142:1
configured	72:16	10:11,14,17,22	101:21 102:3	158:8 175:22
171:12 180:8	Cont'd 139:8	35:11 49:3,6	correlation 29:10	182:16,20
confirm 48:19	contain 15:16	54:18 55:9,15	29:13,14,17,18	created 84:15
confirmation	151:21 153:5	57:4 60:13	29:20 30:6,12	95:12 97:10
76:22	154:3	66:17 74:3 75:6	30:13 33:1,3,20	creating 89:7
connect 15:11	contained 21:6	75:18 85:9 90:6	34:12,17 36:16	167:6
connected 43:5	21:19 23:5,16	92:5,13,20	37:10 51:22	creation 169:22
130:19,22	24:14 28:10	93:13 94:12	60:7,17 61:4,9	170:10
141:9 142:12	contains 77:3	96:10 99:16	61:12 62:19	Cross 167:2
147:19 161:21	152:2,5 154:6	102:17 109:9	72:8,18,20 73:3	crystal 152:11
connection 29:22	154:15	137:15 148:20	100:2,8,10,14	CSR/RMR/CRR
40:7 42:16	content 13:4	158:20 160:14	100:15,18	185:22
146:7 147:3,5,7	context 13:3,8,11	161:3 178:21	102:19 103:6,8	CSR/RMR/CR...
151:8,16 155:2	14:10,13,17	187:9,12	104:1 105:12	1:19 2:5 185:4
161:8 162:8,9	15:1 17:12	correctly 55:22	105:20 106:4	cut 70:15 77:22
163:1 177:19	19:14,21 20:12	165:7 179:15	106:18,20	
178:5	21:4,17 30:10	correlate 82:4	108:11 110:22	D
connections 21:8	85:14 88:12	127:14	116:19 119:21	D 5:1 87:1 88:4
21:19 39:22	89:4 116:15	correlated 14:1	120:1,4,7 122:5	D.C 1:21 187:2
40:11,20 42:11	117:10 118:2,4	28:22 29:6	123:4,17,20	188:3
52:5 55:19	118:21 167:11	30:11 31:4,5,18	127:4 129:15	Dallas 3:7
79:11 80:19	167:14 171:4,5	31:19,21,22	131:9 165:22	data 40:2,2 77:15
109:19 117:7	contingent 9:6,8	33:10,16 34:16	correlations	84:7 90:14
130:7,10	continue 39:17	34:17 35:8,13	102:1 119:20	91:18 92:22
139:19 140:4,7	63:8 77:16,21	35:18,21 36:2,9	120:12,20	93:2,7,11 94:8
140:17,18	82:21 89:18	36:11 37:17,18	121:4 124:8	99:11 101:8
141:1,5,12,18	Continued 4:1	43:20 44:3 46:9	127:14 128:22	129:4 150:19
141:21,22	continues 39:9	47:5,17 48:4,22	counsel 8:2,10	153:13
142:5,8,9 144:4	65:13	49:19 50:16	54:4 71:13	dataset 147:21
144:19 146:17	convenient 92:1	51:3,15 55:18	98:14 185:17	147:22 148:2,2

148:5,6 datasets 127:11 127:11 Date 186:4 187:5 187:17,22 188:10,22 day 185:10,20 days 8:4 DC 3:16 4:7 186:2 DCADO 38:14 dealing 177:10 dec- 92:2 decent 14:5 decision-making 76:22 decisions 119:16 declarant 2:3 declaration 5:17 6:15,17 10:1,10 10:19 16:1,3,10 16:12,19 21:2 22:13,16 25:17 26:6,7,11 27:5 27:10,12 28:14 28:16 30:19 31:12,14 32:4,5 32:8 33:8 34:10 36:6,14 37:7,21 38:2 39:11,13 40:14,16 43:15 43:16 44:8,9,11 44:13,16,19,21 45:4 48:13,17 48:18 49:10,15 50:7 51:9,10 52:11,13,19 53:7 54:22 59:21 61:21 66:6,7,11 70:17 75:5 84:22 85:5 85:11,19 86:15 88:15 91:22 101:7 107:6 114:18 115:22 116:9 120:13 120:19 121:2	122:9,12 124:6 133:8 139:11 149:8 151:1 152:7,11 153:9 165:14,15 180:19 deep 130:16 define 155:3 defines 168:20 definitely 127:18 denote 170:1 dependency 148:12 dependent 14:11 134:14 depending 134:15 144:21 163:7 177:6 depends 13:3,4,4 14:11 103:20 125:8 134:16 137:14 145:5 148:2,9 depict 162:22 depicting 162:19 162:20 depiction 40:19 41:15 depictions 95:4 deponent 186:4,7 186:9 deposition 1:14 2:1 8:10 19:13 48:20 119:2,9 126:8,11 184:3 185:10,14 186:4,12 187:5 187:7 188:10 depositions 143:13 derived 56:21 describe 29:18 30:5,17 41:21 50:16 59:1 67:21 68:16,19 68:21 69:2 73:14 76:11	77:9 78:22 79:7 84:2 120:19 121:13 123:12 152:6 170:9 173:22 174:21 176:1 179:22 described 15:20 16:7 17:4 18:8 18:16 20:16 21:17 25:1,3 32:12 34:20 41:5,11 43:13 46:15 47:9 67:22 69:15 72:6 74:13 80:14 84:2,2 88:13 108:17 108:19 111:8 111:12,18 112:3,17 113:11 114:8 117:10 118:5 118:14 128:8 128:11,20 129:7,13 134:11,18 150:22 173:8,9 174:8 175:10 175:12,14 describes 16:22 40:4 42:5 46:8 46:15 51:14,22 60:16 62:19 66:20 67:10,15 74:10 78:3 79:5 81:18 83:9,20 108:20 110:22 118:20 121:3 129:3,14 151:6 176:3 177:2 182:22 183:2,4 describing 39:10 40:8,10 52:2 69:9 77:12,13 78:17 79:1,8 82:14 89:12,19 180:17	description 11:20 12:18 13:14 14:5 16:13,15 40:19 41:2,3 47:4,10 50:3,20 51:1,4,6,17,19 59:7,9 63:17 67:8 69:6,22 73:13 74:22 75:3 79:2 80:14 80:16,17 82:22 88:21 93:2 110:10 116:3 116:17 118:13 151:11 159:8 159:14 160:6 165:14,16 166:2,3 171:7 descriptions 67:6 74:2,20 76:2 113:4,6 115:14 116:15 design 14:13 20:13 22:8 125:8 126:13 designed 13:5 14:13,17 17:11 17:11 19:15,22 20:13 21:5 23:4 23:16 122:7 desk 53:14 destruction 169:22 170:10 detail 26:13 30:17 57:20 171:16 173:9 detailed 173:13 details 18:13 20:11 21:9,12 21:16,21 22:2,2 23:18 24:8 25:15 27:9,13 31:8 37:2 39:10 41:2,10 42:20 46:16 47:8 51:7 56:17 58:7,11 68:22 82:16	83:9,12,15 84:5 89:13 90:14 93:5 103:3 115:5 117:10 118:20 123:12 129:3 168:18 171:8 173:13 174:1,2 175:2 176:1 180:17 182:9,12 detected 91:20 94:17,22 95:16 96:9,15,19,20 97:2,16 determine 155:11,12 156:8 determines 156:5 156:6 determining 60:3 69:5 87:13 99:1 99:4,9,16 102:10,13 103:13,16 developed 20:8 device 11:3,4,4,6 11:9,9,10 29:7 33:12 36:10,12 39:6 42:7 55:21 60:9,19 61:6,12 62:7,21 67:11 77:11 78:12 82:6,11 90:20 100:4,10,21 102:11,15,21 103:1,3,14,17 104:16,22 105:2,5,8 106:3 106:7,8 111:2 113:17,22 115:11,19 116:8,21 119:22 120:2,6 120:9 121:19 122:1,4,4,10,13 122:20 123:2,6 123:7,16,19,20
---	---	--	---	--

123:22 124:9,9 125:14,14 126:1,3 127:6 132:10,11,15 132:16,17 133:14,19,22 134:4,8,11,12 134:13,18,19 134:22 135:1,7 135:8,12,12,13 135:14,15,16 135:17,18,19 135:21,22 136:1,2,3,3,4,6 136:6,9,9,11,12 136:16,18,19 136:20,21,22 137:2,3,3,5,6 137:17,21,22 138:2,3,8,8,10 138:12,14,15 165:4 167:17 181:3,9,19 device's 39:6 78:11 82:11 devices 1:7 11:12 11:14 39:5 78:10 79:9 82:10 120:21 121:5,15 122:18,21 124:20 127:16 129:1,16 131:8 131:10 132:20 186:3 187:4 188:8 devil 26:12 37:2 56:16 57:20 58:6 174:2 dia- 145:19 diagram 145:6 145:19 147:11 147:12 162:10 diagrams 144:14 144:17 146:20 difference 11:8 18:1 21:13,17	30:9,12 31:3,17 31:20 33:2 differences 35:16 different 10:5 11:12,14 24:15 24:18,22 45:12 95:6 106:8 107:4 120:11 120:12,21 121:5,15 122:11,14,21 122:22 124:16 124:19,20 126:17 127:16 132:19 134:13 134:19 135:13 141:8 142:15 144:12,14,22 145:1,3,4 147:17,18 148:1 149:15 157:22 162:14 168:16 173:3 173:10,19 174:18 difficult 22:1,11 65:21 66:1 149:14 176:22 Digital 1:20 186:19,20 187:1 188:1 diminishing 128:4 Diplomate 2:8 185:6 direct 30:12 33:1 33:2,13,18,20 34:12 37:4 132:22 directly 31:3,18 31:22 32:3 36:2 73:6 disagree 17:3 105:3 disclosed 39:4 78:9 153:16 discloses 176:15	disclosing 42:6 153:10 disclosure 39:1 83:19 84:1 171:11 disclosures 84:1 discuss 18:14 25:15 31:9 82:16 112:20 150:22 170:14 discussed 56:20 69:14 100:13 110:19 135:22 153:17 168:2 170:17 176:14 182:12 183:9 discusses 38:18 103:3 134:8 168:9 172:19 182:14 discussing 16:16 80:7 153:20 177:12 discussion 60:16 101:7 132:6 160:11 discussions 115:1 115:4 Distance 92:18 distinction 18:21 19:2 distinctions 102:7,9 diverse 127:11 document 65:16 65:17,21,22 66:1,2 documents 6:9 7:22 doing 24:13 48:1 60:15 95:18 118:12 123:2,9 127:17 146:13 165:11 174:22 179:21 183:1,2 dot 160:3,3,3,14 160:14,14	dots 92:19 160:22 downloading 6:9 downstream 55:18 Dr 1:14 2:2 5:4 5:17 6:1,7,17 54:4 64:5 71:21 139:5 185:10 186:1,4 187:5 188:9 draw 19:2 drawn 110:13 159:9 160:20 drill 143:13 drink 124:16 drive 114:1 125:1 125:2 dropouts 128:2 due 49:5 duly 6:2 185:12 E E 3:1,1 4:1,1 5:1 5:7 87:1 88:4 139:1,1 e.g 150:18 169:22 170:10 180:9 earlier 58:17 63:14 72:6 76:10 100:1,14 101:4 106:13 142:3 early 128:17 easier 10:3 efficacy 168:22 Eileen 1:19 2:5 6:2 185:4,22 either 15:9 19:1 114:11 electronic 7:21 64:5 electronically 8:9 85:21 186:21 element 11:16 29:8 35:3,4 36:4 54:11 60:1	60:2,7,16 61:4 61:16 71:4 78:3 79:4 85:14 88:14,15,20,22 101:5,6 110:22 113:7 114:19 115:1,13,15 116:4 129:11 131:19 136:1 136:20 elements 10:2,5 10:19 69:6 129:9 130:10 Eli 1:14 2:2 5:4 5:17 6:1,17 139:5 185:10 186:1,4 187:5 188:9 ellipses 92:19 embodiments 13:22 38:14 employee 185:17 185:18 empty 150:10 English 29:19 entails 171:5 entire 27:19 45:17 56:5 64:15,18 68:14 78:16 108:21 110:1 113:10 116:17 117:9 118:4,14 156:20 entities 30:1 entitled 32:21 entity 30:2,2 equation 175:15 175:17 176:6,7 176:9,10 180:15,15 182:14,15 183:6,7,7 equations 169:13 174:9,10,14 175:22 176:6 errata 186:11
--	---	--	---	--

187:11 188:6 error 130:13 152:22 ESQUIRE 3:3,13 4:3 essentially 12:18 42:17 62:15 72:9 82:1,3,14 83:16 84:14 86:10,12,18 97:4 100:17,22 101:6 141:9 151:10,11 154:1 167:4 establish 47:22 established 53:8 108:3 et 12:16 13:21,21 14:3,3 40:3 41:6 42:7 50:5 53:4 56:22 63:4 74:2 77:5,17,17 78:15,15 80:19 80:21 84:9,9,16 89:17,18,18 90:5 95:14,15 101:9,10,10,10 124:5 135:19 140:3 142:2,13 143:9 150:10 157:10 165:18 eventually 79:13 Evidence 1:20 186:19,20 187:1 188:1 exactly 13:6 18:12 24:13 37:17 43:12 45:16 57:21 58:20 59:2 63:15 73:3 80:5 80:13 119:17 127:20 141:5 141:17 151:18 153:20 159:7,9 160:19 161:20 166:1,12 170:9	171:8 172:19 172:21 179:19 179:20 Examination 5:2 6:5 139:8 184:6 examined 6:4 185:11 187:7 example 15:2,3 39:3 42:5 43:22 44:3 78:9 122:8 122:9 124:21 129:6,11 130:2 131:12,20 examples 131:14 exception 52:13 excerpt 55:13 76:11,14 80:8 80:13 81:10 91:22 139:14 excerpted 75:15 76:9 81:7 113:7 excerpts 73:9,11 75:4 79:20 108:18 excuse 142:16 155:11 executable 87:2 90:8 executed 86:21 86:22 87:5,6,21 executing 99:5 exhibit 5:12,14 5:16,19 6:14,16 6:21 7:1,3 12:3 64:3,14,15,22 65:1,7,8,12 66:8 148:19 exhibits 6:12 7:10 8:3,18 148:16 expand 127:9 experience 27:19 expert 20:3,4 141:15,17 experts 79:20 explain 72:17 116:2 126:10	144:14,18 179:19 explained 71:3 explanations 69:16 explicit 83:19 84:1 explicitly 162:14 exploring 128:3 express 186:22 expressed 150:9 extensively 151:1 153:17 170:18 eyes 70:20 71:6 74:4 F F 139:1 fact 115:8 171:9 fair 50:13 75:13 131:16 145:9 familiar 71:11 146:6 famous 107:15 107:17 fantastic 132:2 fast-forward 157:14 favorite 126:20 fear 124:11 feed 58:3,9,13 157:11,13,14 157:18 177:19 feed-forward 142:9 155:22 feedback 15:12 164:7 feeds 130:22 feels 97:18 feet 130:12 field 20:3,4 30:8 82:17 142:4 143:22 fifth 12:13 152:12 figure 38:5,6,7,9 38:12,15,19,21	39:14 41:4,5,20 42:22 43:4 44:2 44:14 45:3,14 47:3,9,10,13,15 48:2,21 50:2,16 51:2,9,16,18 52:2,12 55:14 55:16 56:1,2,12 56:13 58:16 63:2 66:13 67:22 73:13 76:20 83:13,14 92:1,10,10,12 92:14 107:5,13 107:15,17,22 109:6 110:10 110:13 111:7 112:1,22 113:3 113:3,15 114:15 115:2,6 115:17 116:19 118:5,15,17 122:10,20,21 142:17 143:22 144:10 146:16 146:18 153:10 153:11,14 158:22 159:8 159:14,18 160:11,20 161:5,9 162:1 162:18 163:16 180:11 figures 65:14 92:9 115:5 122:18 file 5:19 64:18 65:1,10 filed 46:4 files 64:20 final 119:16 143:3 financially 185:19 find 66:3 81:9 88:15 133:1,12 148:18	fine 10:9 107:11 112:18 firm 71:18 first 11:3,9,12,13 12:10 17:20 35:4 64:21 66:2 88:5 91:20 93:14 94:17 95:4,11,19 96:9 96:20 97:2,10 97:17 119:6 123:1,3,16,22 133:22 134:4 150:1,4 162:19 163:18 168:21 171:9,21 173:20 180:3 Fish 3:5 71:19 five 98:4 139:18 152:18 160:11 160:21 179:4 fix 28:2 fixed 153:1 flow 83:13 fly 15:5 19:11 21:1 22:12 focused 35:18 focusing 116:16 Following 155:17 follows 6:4 139:7 forbidden 186:21 foregoing 187:7 form 12:22 15:21 17:7 18:4 19:18 20:6,20 22:5,20 23:12 24:2 25:12 26:2,22 28:4 30:15 31:6 32:1 33:5,22 34:14 36:19 37:12 39:16 40:21 41:16,22 43:6 58:4 59:12 60:21 61:19 62:8,22 100:12 105:9 108:15 111:9 112:4
--	---	---	---	---

113:1 117:16 144:7 145:12 166:9 170:7 formula 168:16 forward 58:3,9 58:13 125:1 130:12 132:15 132:16,17 157:11,13,14 157:18 186:11 found 9:18 83:10 four 7:10,21 109:19 139:18 162:21 163:18 179:4 fourth 12:12 frames 145:2 Friday 2:3 front 7:14 8:3,7 16:10 19:7 56:19 59:18 85:17,20 99:18 99:21 full 7:14 65:5 179:7 181:2 fully 130:18,22 fully-connected 142:10 144:13 fun 109:4 132:1 143:11 functionality 77:14 79:10 89:7 functionally 78:18 functioned 84:16 functioning 84:3 107:2 functions 23:6 80:18,20 84:6 87:8 101:9 142:1 157:21 164:4 further 13:22 33:10,15,16 34:16,17 35:13 35:18 88:3	138:5 139:7 165:17 183:16 185:17 future 130:7 G general 16:15 17:9 18:7 34:4 41:1 110:9 137:8 145:21 146:13,15 160:19 177:14 generalizing 111:5 128:1 144:9 generally 18:8 31:7,16 56:15 57:21 74:13 87:15 88:2 91:8 91:10 101:16 101:17 102:6 105:1 108:8 109:9,11 110:11,16 115:20 120:3 125:16 142:4,6 144:18 165:10 generate 88:11 89:3,21 generated 85:7 96:6,7 generates 90:9 90:12 generating 87:12 88:6 89:8 91:17 124:4 172:2 generic 40:9,12 40:19 41:1,14 42:22 56:16 95:20 165:13 165:16 166:3 166:18 171:7 171:15 176:1 182:11 generically 41:21 57:14,19 58:5 58:12 144:8	getting 80:7 164:20 giant 177:9 give 6:8 12:8 13:13 15:2,3 17:2 24:9,19 25:21 28:1 50:13 53:9 82:20 99:15,19 110:3 112:15 120:21 122:9 124:21 126:17 126:20 130:1 133:15 163:4,4 171:16 174:10 given 12:3 16:13 28:7 58:11 125:9 129:8,12 131:14,18 156:11 162:8 178:4 181:3 187:10,13 gives 91:11 126:18 145:6 166:2 168:16 giving 95:20 182:15 go 10:4 13:14 38:1,5 40:5 61:22 64:10 66:1,6 70:14 75:8 78:5 85:8 85:8 90:15 98:5 114:17 122:12 128:3 130:2 140:1 153:4 157:8,9 164:18 165:14 168:11 168:11 169:11 169:11 172:18 172:22 175:15 179:18 180:7 180:20 183:19 goes 11:3 14:21 51:5 60:4 89:1 99:13 109:4 120:16 154:22	178:22 going 9:15 17:2 17:18 28:1 47:7 50:9,10 53:12 58:8 59:1 63:8 63:9 64:1 65:4 65:11 66:10 67:21 77:21 78:20 79:1,3 80:1,16 86:17 87:10 96:4 97:22 98:2 112:11 114:9 114:17 116:3 120:22 127:1 130:3 132:6,22 133:10 138:16 139:15 143:20 143:20 148:16 149:13 155:3 157:21 163:6 172:15 174:1,2 good 6:7,8 13:13 53:13 85:18 97:18,21 98:1,4 149:12 governing 186:13 GPT 126:15 gradients 128:3,4 graph 12:16 13:20 14:20 15:2,2,4,6,8,19 16:6 17:1,4,5 17:11,12,21 18:1,2,9,12,21 19:2,6,12,16 20:4,10,16,19 21:3,4,7,13 graphical 143:20 144:2 graphs 12:21 15:16,18 great 7:11 88:18 150:3 167:1 ground 32:8 34:7 34:21 grounds 37:21	Group 1:20 186:19,20 187:1 188:1 groups 89:11 guess 8:12 181:17 182:18 GUNTEN 3:13 guys 98:2 H H 5:7 halfway 89:14 90:17 handle 126:14 127:10 handled 21:8 handles 130:21 handy 85:13 happen 88:1 happened 137:6 138:9 happening 110:6 happens 138:12 138:15 177:15 happy 8:21 9:2 19:5 23:1 24:5 24:12 26:5 28:17 38:1 42:3 47:20 48:6 49:7 50:19,21 68:12 73:17 119:3 121:7 154:19 168:3 180:22 hard 7:22 13:1 15:5 17:9,14,19 19:11,13 85:20 144:10 159:7 159:20 160:3 166:19 harder 143:16 hate 141:14 head 58:22 59:4 59:14,17 74:15 heard 146:2 held 2:3 help 110:2,4 112:10 114:9
---	--	---	--	--

helpful 9:15 85:14	40:12 41:1 42:19 43:8 57:10 93:7	89:10 90:19 99:10 140:2 144:3 151:15	51:15,22 54:15 55:17 56:13 58:17 60:8,17	74:19 81:19 82:5 101:12,14 101:19,21
hereunto 185:19	95:21 109:22	154:16	61:5,10,13 62:5	104:3 125:10
hesitate 186:15	110:2,4,6,18	include/product	62:19 63:3,11	125:20 138:5
hidden 143:3,7	111:16 112:10	55:20	66:15,20 67:5	157:20 159:22
high 42:17	112:16 114:7,9	included 29:7	67:10 68:4,9	inputting 99:10
highly 148:4 170:1	117:1,4,5,8,12	77:1 150:2	74:10 75:19	inside 100:10
history 5:20 20:2 20:2 64:18 65:2 65:10	118:2,7 142:15	158:17	76:11 77:9	instance 29:1 56:18 63:2 75:7
hold 9:13 75:10	illustrations 159:7	includes 39:19 49:18 54:14	79:12 83:20	82:8 84:11
hopefully 17:19	image 65:16,18 94:7 149:18	91:18 95:13	84:13 99:12	122:7,11
hot 158:5	150:2,9,21	99:22 162:4	100:2,8,16,16	129:19 130:1
hour 7:19 53:12 98:1 138:17 185:11	151:3,7,11,14 151:19,21	including 17:1 89:16 90:20,21	100:19 102:19	130:20 144:11
human 140:16	152:2 153:5	186:21	103:7,8,15,19	145:1 155:16
hundred 104:3	154:1,3,10,15	incompatible 181:3	103:21 104:2	161:22
hypothetical 17:15	154:16 165:3,9	inconsistency 182:19	104:15 105:12	instances 9:3 96:1
I	166:8,21 167:3 167:16 168:4,6 168:8 169:15	incorrect 28:3,6	105:14,20,22	instruction 28:22 29:7,12 30:11
i.e 12:15	170:17 171:22	index 143:1	106:5,10,11,14	30:14 31:4,5,19
idea 56:15,16 62:5 90:15 94:5 112:2 115:21 117:1,13 141:6 145:6,13	172:17 173:4,7 174:7 175:13 176:13 177:3,4 177:10 179:13 179:13,16,17 181:2,8,18,21 182:2	indicating 160:16 indirect 30:13 33:1,2,13,19,20 36:16 37:10	106:18,19	31:20 33:3,11
ideally 148:4,6	imagery 130:22	indirectly 31:5 31:18,21	108:4,9,12	33:16 34:13,18
identifies 68:4,9	images 145:3 150:16 179:7 179:12 182:20	info 14:14	109:5,6,12,17	35:8,21 36:3,9
identify 10:19 25:22 26:19 27:17,21 83:18 121:3	imagery 130:22	inform 46:7	110:15 111:1,6	36:12,17 37:11
ignoring 116:17	implementations 171:10	information 15:17 20:15 21:18 22:9 47:14 77:16 79:12 81:2 90:2 90:8 151:15,22 153:6 154:4 157:16 177:20	111:7,11,19	43:21 44:4,4
ii 94:15,21 96:5,8 96:14	implemented 130:11	informs 46:11	112:2,3,20	46:9 47:5,18
illustrate 117:1 117:12 145:9 145:14 161:7	implies 52:6	initially 90:1 128:16	113:20 115:9	48:4,22 49:19
illustrated 110:17	important 23:18 26:14 152:22	input 28:21 30:13 31:21 34:12 43:4,10 43:19 44:3 46:8 47:4,17 48:3,21 49:18 50:16	115:17 116:7	50:17 51:15
illustrates 38:12 145:6	inappropriately 27:3		116:20 117:6	52:1 55:20
illustrating 42:18	include 13:19 14:2,19 39:7 55:13 78:13		117:14,15	56:14 57:3,7,18
illustration 40:10			118:9 119:21	57:22 59:11
			120:1,5,8 123:5	60:4,9,18 61:5
			123:18,19	61:11,13 62:6
			125:12 126:4	62:20 66:16,20
			127:4,14	67:6,11 68:5,10
			128:22 131:9	72:2,10,19 73:7
			143:1 162:8	73:15 74:11,20
			182:1,3	75:1,8,16,17,20
			input/output 156:11	76:12 77:10,15
			inputs 21:5 22:10 24:10 29:12,20 30:10 31:3,4,17 33:3,10,15 35:8 35:21 36:2,17 37:10 51:3,4 52:6 54:15 57:3 57:6,11,15 72:10,18 73:6	78:3,22 79:5,7 79:13,17 80:5 80:11,12,22 81:3,22 82:6 83:1,4,21 100:3 100:9,20,21 101:22 102:11

102:14,20	65:5 185:19	junk 181:14	140:15,20,22	157:11
103:2,14,16	interesting		141:6,17	
105:5,7 106:2,6	111:22	K	144:22 145:15	L
106:15,16,21	intersecting	K 4:6 186:2	146:11 147:2	L 142:11,12
108:5 109:8,13	148:3,5	keep 10:3 14:9,10	151:8 152:4	143:4 146:8,8
111:2 112:20	intervals 95:6	54:9 98:1 107:4	154:7,9 155:1,5	147:4,4 155:22
113:16,16	invite 47:11	182:7	155:14,16	155:22 156:2,3
114:12 115:10	involved 185:18	keeping 107:3	156:10,14,16	156:5,6 158:14
115:18 116:7	involves 179:12	kind 8:14 15:7,14	156:17,20	158:16,16,18
116:20 118:9	IPR 6:12,13	21:10 24:13	157:17,19,20	158:19 163:6,6
119:22 120:2,6	119:11	30:5,6 35:17	158:1,6 159:21	L.L.C 187:1
120:9,12,20	IPR2024-00745	73:4 117:1	160:1,15,15,18	label 93:14 94:9
121:14 122:3	1:10	140:9,19	161:1,1,7 163:9	labeled 39:20,22
122:14,22	IPRs 119:9,13	143:21 145:7	163:10,11	42:10,11
123:6,18 124:8	items 115:13	153:11,12	164:2,3,8,8	161:10,12,16
124:17,19,22	iWatch 8:16	159:12 165:13	166:10 170:14	162:7
125:2,6,13,14		165:15 166:3	170:16 172:12	language 30:22
126:1,2 127:5	J	171:6	174:4 175:7,9	32:18 33:7,14
127:15 128:22	J 146:8 147:4	know 7:20 8:20	175:12 176:4	33:19 34:8,15
131:9 132:7,9,9	151:9 152:4,5	9:2,10,22 15:18	178:4,10,14	34:19 36:8,13
132:11,14,17	JAIRAM 4:3	16:15 17:2 19:6	182:10 183:2,6	36:18 37:1,11
132:19 138:6	12:22 15:21	21:7,18 22:11	183:8	47:7 50:9 51:13
158:2 165:18	16:8 17:7 18:4	23:18 29:17,19	knowing 17:13	53:1,3,6 60:12
instructions 14:2	19:18 20:6,20	36:8 39:10 43:1	155:4	61:3,8 62:2,17
113:21 126:14	22:5,20 23:12	53:2 55:13	knowledge 12:12	63:11,12,13
131:3	24:2 25:12 26:2	56:17 57:13	13:21 14:2	65:6 66:21 70:7
intelligence	26:22 28:4	65:18 67:14,17	15:12 23:16	70:8,11,19 83:9
38:13 76:15,18	30:15 31:6 32:1	72:7,8 73:7	24:14,16 28:9,9	83:10 84:20
77:6,8,14,19	33:5,22 34:14	77:2,3,8 78:6	76:19,20 90:19	85:13,17 100:1
79:9	36:19 37:12	79:9,13,15	knowledgebase	102:5 103:5,10
intelligence-type	39:16 40:21	80:18 81:4,15	11:17,19 12:1,5	104:11 107:4
77:4	41:16,22 43:6	82:4,15,16	12:12,19 13:7	114:11 135:3,5
intelligent 39:4	58:4 59:12	83:10,13 84:10	13:12,19 14:5	140:19
42:7 78:10 82:9	60:21 61:19	85:22 86:11,14	14:19 15:3,4,20	languages 86:12
107:1 125:18	62:8,22 63:22	86:16 91:15	16:7,14,22 17:5	large 64:20 65:22
125:20 131:4	70:2 71:9,17	94:5 96:22 97:6	17:6 18:2,3,16	larger 127:11,11
intelligently	100:12 105:9	101:5,8,13	18:21,22 19:3,3	late 128:16
102:2 103:20	108:15 111:9	102:1,2 103:20	19:9,12,17 20:5	law 71:18
103:22 104:8	112:4 113:1	103:21 106:17	20:19 21:14,14	layer 142:11,12
107:1	117:16 136:14	107:1 110:2,3	22:4,14,19	142:16,18,18
intending 109:2	144:7 145:12	114:16 117:2	23:11 24:1	142:19 143:1,2
intent 162:13,15	166:9 170:7	119:12 121:20	25:11 26:1,20	143:3,4,5,8
interconnected	183:18 184:2	123:3 125:17	28:1 29:9 54:14	146:8,8 147:4,4
15:9	Johnny 183:3	126:19 127:9	76:21 124:1	155:17,21,22
interconnections	jump 27:13	127:10 128:16	knowledgebases	155:22 156:2,3
141:7	54:11 87:16	129:5,18	12:21 14:8	156:5,6,11,14
interested 64:8	94:20	130:17 132:3	known 58:3	156:17,17

157:1,1,1,2,2,3 157:4,8,8,9,9 158:1,14,16,16 159:10 160:2 162:12,19,21 163:1,2,5,5,6,6 163:18,18,22 163:22 164:1,1 170:12 177:20 177:20,22 178:3,4 layers 130:10 142:15,21 143:2,3,7 144:19 145:1,3 155:4 159:4,17 160:4,11,16,17 161:6 162:14 163:19,19 leads 76:4 learning 39:5 78:11,15 79:11 82:10 128:5 148:11 172:1 173:3,11,18 174:20 175:1,4 175:8,19 176:20 led 55:8 left 43:9,19 57:6 57:11,13,15 58:8 60:12 83:1 108:10,12 109:5,7,18 117:14 142:16 142:18 150:14 left-hand 60:6 108:4 161:10 legal 70:3 let's 9:5 11:1 30:1 38:5 53:9,12 59:22 61:7 63:6 66:6 75:10,11 76:3,7 92:11 98:5,17 107:19 109:3 117:21 121:1 132:5	138:18 143:4 147:5 148:15 151:19 164:18 166:21 167:8 178:7 181:22 183:10,18,19 level 28:9 42:18 158:11 levels 24:16 lie 120:11 life 20:3 112:17 lifted 69:17 light 46:14,17 49:13 56:9 70:20 limitation 138:4 limitations 47:16 48:3 55:7 limited 116:11 line 12:13 13:15 13:15 14:19 38:11,18,19 39:18 40:6 42:13 52:3 130:3 146:21 188:11 lines 29:2 39:3 40:5 42:4,15 51:5 82:18 130:3 139:18 152:18 178:14 178:15 179:4 links 90:13 170:1 172:2 list 93:12 listed 88:20 little 10:3 30:6 32:20 36:4 86:1 92:16 93:12 140:1 159:13 166:2 LLC 1:7 186:3 187:4 188:1,8 load 150:16 loader 122:10,14 122:19 125:6,7 location 93:18	151:15 long 14:7 20:8 47:10 78:19 79:2 128:18 129:2 look 8:17 11:16 12:2,4,10 18:9 18:13 24:10 29:1 33:6 38:10 38:17 39:1 42:3 43:8 47:11 53:9 60:5 63:1 64:10 64:15 74:16 75:6 76:13,20 77:13 82:7,8,17 84:20,21 85:5 85:14 86:2 89:14 90:17 91:21 92:1,11 93:9 107:3,5,9 107:9,19 110:21 112:14 117:6 118:4,8 118:17 119:18 120:13 122:7 123:21 129:11 129:17 131:17 132:5 135:16 139:17 142:15 144:12 146:15 148:15 150:4,4 152:6 153:8 158:22 159:21 160:2 161:9 162:1 164:18 168:19 169:13 172:22 173:12 174:6 175:2,16 176:6 178:7 180:2 182:11 182:14 looked 45:17 71:6 looking 8:19,20 9:2 12:3 18:12 32:8 33:7 52:17 56:11 65:11	67:14 70:9 73:18 74:7 76:6 82:21 85:7 90:3 94:6 102:4 109:6 115:7,21 142:18 145:2 149:15 167:18 173:19 looks 14:12 20:10 20:11 22:8 58:12 120:16 145:3 153:12 176:11 loop 137:20 lot 20:8 79:3 84:4 90:14 143:14 143:15 147:12 148:9,12,13 Luncheon 138:20 lunchtime 138:17 M M 1:21 187:1 188:2 machine 78:14 79:10 86:4,4,13 86:18 87:4,4,17 87:21 99:5 124:2 Madam 53:16 Main 3:6 Maine 3:15 manipulated 84:15 manipulations 84:7 manner 155:22 manually 87:9 mapping 149:18 151:4 marked 6:18,22 7:4,8 65:2 material 114:20 mathematics 84:6 matrix 15:13 150:9 155:9,10	155:15,17,18 155:20 156:2,4 156:7,13,16,19 156:22 157:2,3 157:7,9,10,17 158:7,10,14,21 162:17 163:3,7 163:12,15,21 177:5 Matt 63:22 matter 21:13 84:22 85:6 98:2 186:6 max 158:2 McKool 4:5 186:1 mean 14:15 15:6 15:22 19:1 20:7 21:22 23:13 28:21 29:14 30:5 37:20 40:9 40:22 43:7,8 44:7 50:1 51:17 56:15 57:20 58:5 61:7 62:14 65:18,21 67:12 69:8 70:15 71:3 72:5 74:15 79:16,21 80:17 81:15 82:3,7 83:6,22 86:8,9 86:10 88:2,10 89:2,19,20 90:2 90:14 91:15 93:1 95:20 96:21 100:14 101:3,13,20 102:22 105:11 106:14,15,17 111:11,22 115:20,21 116:10,22 118:1,13 120:4 121:19 123:3,4 123:10 124:14 125:7,16 126:15 129:2
---	---	---	--	---

129:17,18	179:7 180:15	50:3,15 55:17	multiple 24:4	140:21 141:10
131:3,15	180:18 182:20	56:2,12,12 57:5	26:4 28:13	141:12 146:16
134:21 135:2	merged 153:22	57:9 58:2,12,17	46:12 48:5	152:1 153:7
142:6,7 143:14	179:17	63:3,11 66:15	50:19 53:7	154:5
144:8,9 145:13	merges 169:12	78:9 80:19	84:12 91:18,20	nets 14:8 140:20
145:20 147:9	179:19 180:6	93:20 94:1,3,4	93:10 94:16,21	143:10
151:5 156:22	181:4 182:8	94:10 101:8	95:14,15 96:1,8	network 12:16
158:5 159:6	merging 167:6	107:19,22	96:15,19 97:2,3	13:19 14:12,20
161:5 165:10	169:14 179:12	108:4 109:6	97:4,9,16 99:10	15:7 23:17 24:7
166:18 170:8	180:13 181:15	110:10,14	122:18 124:14	24:9,13,15 25:9
170:13 171:2	183:5	111:7,14,15	126:14 129:1	25:22 26:20
171:15 172:6	Merit 2:6 185:5	112:1,9,15	129:16 131:8	27:22 28:8,10
172:11 175:2	methods 38:13	113:15,19	131:10 158:4	38:16,22 39:7,8
179:16 181:6	39:5 78:11	114:14 115:8,8	168:9	39:15,19 40:11
181:18 182:7	82:10	115:9,17 116:6	Mulvenna 1:19	40:19 41:15,21
182:13,22	MICHAEL 3:3	116:18 117:12	2:5 6:2 185:4	42:19 43:3 50:4
meaning 13:7	mid-'90s 128:17	117:14 142:16	185:22	51:2 52:4 54:14
70:8,20,22 71:1	middle 55:12	142:17 159:10	mutual 29:22	54:16 56:18,21
71:22 72:1,14	68:6 89:15	modeled 21:18	30:3,3 72:6,11	57:15 58:9,11
72:19	90:18 108:14	84:15	72:14 73:1,2,5	58:13 59:11
means 10:16	142:19 143:8	modeling 84:9	73:5	78:13,14 81:19
32:19 72:14	162:10 165:1	models 38:13		81:20,21 84:11
161:19 177:18	mimic 141:2,20	47:13 80:21	N	84:14 100:11
meant 160:19	mind 30:9,12	84:8 147:18	N 3:1 4:1 5:1	100:17 101:2,8
161:5,6	54:20 107:4	modified 171:22	139:1,1,1	101:11,12,18
media 86:4,13,19	mini 128:6	172:17	Name 187:5	101:19 104:3
meet 33:21 34:8	minor 35:15	modifying 101:9	188:9	105:22 108:9
34:13 36:3,13	69:16	moment 12:8	necessary 64:9	110:9 111:12
36:17 37:11	minus 142:11	99:15 107:5	need 7:19 8:22	112:17 118:10
memory 86:19	146:8 147:4	133:15 169:18	14:11 18:6 20:9	120:19 121:4
mention 11:3,6	158:16,18	moon 172:15	21:2,9 23:2,14	121:13 122:2
152:8,8	minute 6:8 53:10	morning 6:7,8	24:6 28:7,11	124:7 125:8,9
mentioned 26:3	87:11	motion 5:10 7:6,7	31:8 37:1,3,16	125:12 126:13
36:5 41:17	misrepresenting	9:7,8 26:8 27:7	41:8 63:16 86:1	126:22 127:3,6
44:18 45:7 48:8	27:2 37:14 49:2	35:4 44:20	99:19 118:16	127:8,13,19
49:6 51:18	mixing 172:7	52:14,16,18	133:11 152:7	128:21 129:15
52:14 56:4	model 15:18 38:9	54:10,10 56:7	155:1,14,16,18	130:19,21
63:14 83:5	38:15,20,21	84:17,21 85:1	155:20 156:2,3	131:1,7 132:9
102:22 106:13	39:4,13,14,21	85:12,16 90:14	157:16,19,20	140:2 141:19
108:17 111:17	40:1,4,9,16,18	101:5 114:20	158:1,6,8 175:1	142:10,10
128:12 169:18	41:14,20 42:6,9	116:4 132:22	needed 127:9	144:13,21
mentioning	42:10,12,16,17	133:1,3	needs 18:11	145:5,8,10,15
14:10 77:18	43:3,20,21 44:2	move 91:1	61:16	146:3,4 147:15
mentions 11:2	44:10,14,16,18	124:15 125:6,7	net 22:3,4,8,18	149:22 153:10
menu 179:8	44:21 45:2,14	132:14,16,17	23:3,10,15,22	153:20 154:16
merge 153:16,20	45:19 46:7 47:3	moving 57:13	58:3 125:22	154:17 155:6
178:16,18	47:12 49:18	90:4	130:15,15,16	155:13 156:9

156:20,21	118:9 120:19	72:1 73:14	141:16	numbered 10:2
157:18 158:8	121:4,13 122:2	74:10 75:20	new 2:9 6:3 97:13	92:7,8 159:22
159:5,18 162:3	124:7,14	76:11 77:7,10	172:2 185:1,8	176:10
162:3,18	125:12,22	80:18,21 83:20	nice 175:1	numbers 5:10,16
163:16 168:13	126:6,22 127:3	84:5,13 99:12	node 15:14,14	5:19 6:16 7:7
169:1,3,4,12,21	127:6,8,13,19	100:2,8,16,17	29:8 40:2 42:14	65:1 156:15
170:22 179:19	127:21 128:21	100:19 102:19	146:8,8	181:13
180:4,8 182:8	129:15 130:15	103:7,9,15,19	nodes 15:8,11	NW 1:21 4:6
networks 24:15	130:15,16,19	103:21 104:2	21:7,19 39:20	186:2 187:1
24:19,22 25:3	130:21 131:1,7	104:15 105:4,6	40:11,20 42:9	188:2
26:17,18 27:16	132:8 140:13	105:13,14,15	43:4,5,9,10,10	
27:18,20 57:11	140:14,20,21	105:21,22	43:11,19,20	O
77:4,7 101:14	141:2,10,12,19	106:5,11,14,18	44:3,5 50:5	O 139:1,1,1
124:14 126:6	142:7,9,10	106:20 108:4,5	52:5 59:10	O-F-F 175:22
127:21 140:13	143:10,18,19	108:9,10,12,13	79:11 130:9	object 14:1 29:5
140:14 141:2	143:21 144:3	109:5,7,7,12,13	140:2,7 141:8	40:2 84:7 89:6
142:7 143:18	144:13 146:3,4	109:18,18,20	141:10,12	89:8,9,11,19
143:19,21	146:15 147:15	110:15,15	144:3,19,20	90:12,18 91:3
144:3 155:11	149:22 152:1	111:1,6,8,11,20	146:16 151:16	91:18 92:15,16
155:19	153:7 154:5,16	112:2,3,20	156:8,10,21	92:22 93:2,7,10
neural 12:16	154:17 155:6	113:14,20	159:21 161:10	93:15,17,21
13:19 14:8,12	155:11,13,19	114:12 115:9	161:12,16	94:1,4,4,14
14:20 15:7 22:3	156:8,20,21	115:18 116:7	162:5,20,21	95:14 96:2
22:4,7,18 23:3	157:18 158:8	116:20 117:6,7	163:1,2,17,18	97:13 99:11
23:10,15,22	159:5,18 162:3	117:14,15	182:21	objection 12:22
24:7,9,13,14,15	162:18 163:16	118:9 119:21	nodes/neurons	15:21 16:8 17:7
24:18,22 25:3,9	neuron 29:8	120:1,5,8 123:5	55:18,19 58:18	18:4 19:18 20:6
25:22 26:17,18	106:10 132:8	123:18,19	63:3,12	20:20 22:5,20
26:20 27:15,17	142:11 147:4,4	125:12 126:4	non-transitory	23:12 24:2
27:20,22 28:8	151:9,9 152:3,4	127:5,15	86:3 124:2	25:12 26:2,22
28:10 38:16,22	152:5,5 154:8,8	128:22 131:9	nonlinearities	28:4 30:15 31:6
39:7,8,15 40:10	154:21,22	132:7 140:3	142:1	32:1 33:5,22
40:19 41:15,21	157:4,5,7,22	141:11,19,20	Nope 54:8	34:14 36:19
42:19 50:4 51:2	170:6,11,12	142:5,8,12	Notary 2:8 6:3	37:12 39:16
52:4 54:14,16	173:6,6 177:4,6	143:8 147:8,16	185:7 187:22	40:21 41:16,22
56:18,21 57:11	177:8,9,22	149:21 151:4	noted 187:11	43:6 58:4 59:12
57:14 58:3	178:2,3 181:22	151:22 153:6	notes 8:6 185:13	60:21 61:19
59:10 76:11	182:1	154:4,17	185:15	62:8,22 70:2
77:4,7 78:13,14	neurons 14:14	155:12 158:11	notice 57:12	100:12 105:9
81:19,19,21	23:5 39:21 46:8	158:12,18,19	noticing 186:12	108:15 111:9
84:11,14	47:4,17 48:3,21	159:12 160:8	noting 186:12	112:4 113:1
100:11,17	49:18 50:16	163:8 164:2,4	number 9:12,15	117:16 136:14
101:2,8,11,12	51:15,22 54:15	172:2,3 173:5	133:7 151:15	144:7 145:12
101:14,18,19	56:13 60:8,17	174:12 175:19	151:22 153:6	166:9 170:7
104:2 105:21	61:5,10,13 62:5	176:16,21	154:4,17	objects 89:16
108:8 110:8	62:19 66:15,20	182:3,4	155:11,12	90:4,4,21,22
111:12 112:16	67:5,10 68:4,10	neurosurgeon	160:18	91:20 94:17,22

95:15 96:9,15 96:19,20 97:2,3 97:4,9,12,16 129:4 obtained 180:9 obviously 15:6 37:14 39:20 40:9,22 45:5 46:10 49:14 50:1 52:3,6,15 56:5 57:9 58:6 58:7 65:22 66:22 68:21 77:3 78:17 79:1 79:11,16 82:2 87:9 90:12 91:2 93:1 96:22 97:14 101:20 102:7 103:19 104:8 106:22 108:20 109:21 109:22 110:5 110:12 111:16 112:11 113:9 113:21 116:22 122:11,13,21 123:12 125:18 130:13 138:7 140:13 141:4 141:15,22 145:16 147:19 153:15 155:5 162:12 163:3 168:14,20 171:3 173:12 176:22 occurrence 130:6 OCR 66:2 office 1:1 186:7 186:15 offspring 175:22 180:8 oh 19:11 30:22 70:4 107:13 149:9,11 178:20 okay 7:13 8:6,17	8:20 9:21 10:12 14:18 25:21 28:19 29:4 35:22 37:6 41:20 44:12,17 48:7 50:8 53:9 53:14,16 54:20 55:2,5,12 61:15 62:4 63:21 64:17,20 65:8 66:6,12 74:6,9 75:11,12 76:7 76:18 77:20 78:19 79:3 81:12 84:19 85:7,12,18 89:2 91:5 92:4,4,11 93:4 94:8,13,15 95:7,10,22 96:3 97:18 98:17,21 104:6,10,21 105:17 108:1 109:2,17 110:14 112:8,8 113:19 116:12 117:19 118:12 118:22 119:5 119:12,18 126:12 131:16 131:22 132:21 133:4,17 137:12 143:6 146:22 149:2 149:11 153:3 156:12 159:15 160:5 161:4 162:16 164:6 166:5 167:1 169:17 172:14 175:7 176:18 177:21 183:10 once 19:9 one-to-one 72:9 open 8:3 9:7 65:15 140:11 open-close 150:10	open-ended 17:15 19:12 21:22 34:4 36:22 opened 140:12 opening 140:9 148:22 operate 124:20 operating 29:7 33:11 36:10,12 55:20 60:9,18 61:6,11 62:6,20 67:11 77:11 78:18 82:6 100:3,9,20 102:11,15,21 103:2,14,16 104:15 105:5,7 106:2,7 111:2 113:17 115:11 115:19 116:8 116:21 119:22 120:2,9 122:18 123:6 124:8 126:1,2 127:16 132:10,11 135:17,21 136:18 137:1 137:17 138:7 operation 39:7 78:12 82:12 opine 16:18 22:13 23:7 24:8 24:12 28:8,17 44:10 51:8 opined 21:1 25:17 43:14 44:15 51:9 opinion 44:12 45:3,14 48:21 50:15 69:4,21 108:7,11 109:14 115:9 115:17 116:6,8 116:10,18 136:5 154:14 174:18	opinions 16:9 26:6,7 27:4,6,8 28:14 31:14 32:3,6,7,11,12 34:5,9 36:6,7 37:20,22 39:13 40:16 44:8,13 44:21,22 45:8 45:18 46:1,2,6 46:8,11,19,20 46:22 47:1 48:9 48:12,13,15,18 49:10,11,16 51:11 52:9,12 55:6 56:3,6,8 opportunity 28:2 120:22 option 186:9,10 options 179:8 183:9 oranges 172:8 ordinary 63:18 67:3 70:7,20 71:1,22 72:1,14 72:19 74:12 95:3 135:9,11 organized 99:20 original 10:20 55:10 186:11 ors 169:15 182:17 outcome 119:12 outline 126:21 127:1 output 43:5,11 43:20 44:5 55:19 59:10 79:12 81:2,21 100:22 101:11 108:5,10,12 109:7,13,18 110:15 113:14 113:20 114:12 117:7 124:15 124:15 125:1,2 125:6 132:7,8 143:4 156:6	158:1 160:2 182:1,4,21 outputs 21:6 22:10 24:11 51:4 52:7 57:16 57:18,22 73:7 79:13,16 101:15,18 124:14,20 125:21 127:15 156:1,1,3,5 158:4 outside 47:1 overfitting 128:1 Owner 1:8 4:4 owner's 9:8 P P 3:1,1 4:1,1 P.C 3:5 p.m 139:2 184:7 page 5:2,8 9:12 9:14,15,19 10:8 38:11 45:21 54:22 55:2,5,10 55:12 59:21 60:3,5 62:10 63:2 65:12 66:10 67:1,2,12 67:12 68:7 75:4 75:5,7,9,11,12 76:10,14 77:13 78:5,20,21 80:9 80:10 83:1,3,7 83:7,14,14 84:4 85:5,11 88:17 88:19 89:1,1,5 89:14,15 90:17 91:21 101:7 107:6,8 113:4,5 113:17 114:18 114:21 115:21 120:14,15,17 122:7,8,12 131:17,18 133:2,7 134:2 139:18 149:14
--	---	---	---	---

152:12,18 165:20,20 186:12 187:4 188:11 pages 53:7 56:8 61:22 62:16 68:15,20 69:15 71:8 82:22 108:18 121:8 121:10 139:11 150:11 177:12 187:7 Pandora's 140:10 paper 5:10 7:5,7 9:8 paragraph 31:12 32:9,9,10 33:8 37:22 48:16 149:5,9,17 150:5,6,12 151:2,7 152:6 152:10,12,13 152:18,19 153:9,18 159:9 159:14 160:7 162:2 164:11 165:2,15,17 166:4 168:11 168:19,21 169:17,20 170:21 171:10 171:18,21 173:20 175:15 176:11 178:7 178:12,13,21 179:18 180:3,7 180:13,18,20 181:1 paragraphs 149:15 169:5 parameters 128:5 paren 150:10 parent 153:22,22 175:18,21 180:10	parentheses 55:17 58:16 parenthetical 66:14,14 parents 167:6 part 26:14 31:12 45:19 52:19 58:21 64:21 65:4,5,12,15 81:7 122:6 128:7 147:3 171:21 173:9 particular 32:11 34:6 42:16 54:11 62:2 67:22 68:16 69:2,13 70:11 81:3 83:15 84:17 88:14,20 101:5 113:7 114:22 117:4 121:22 131:19 170:15 parties 185:18 parts 64:19 65:7 65:8 party 71:17 pass 183:17 paste 59:2 patent 1:1,2,8,11 4:4 5:13 6:13 6:20,22 9:8 11:21 12:2,4,20 13:11,14 14:5,7 14:7 16:14,22 25:4 26:8 29:2 38:5,6,10,17 45:6,17,20,21 45:22 46:8 48:12 50:14 51:14 55:8,11 81:16,18 82:3,9 82:13,14 96:21 107:10 117:3,3 118:8,22 122:3 123:13 128:9 128:20 129:7	129:18 135:2,4 140:11 183:9 patents 135:3 pathways 170:2 pause 63:7 71:9 PDF 12:9 65:11 pending 7:20 people 142:4 146:20,21 perform 86:22 87:8,12 88:3 period 186:13 person 63:18 67:3 71:10,12 71:12,13 74:12 95:3 135:9,10 137:4 157:16 185:18 petition 45:7 46:3 48:10 Petitioner 1:5 3:4 Ph.D 5:18 6:17 phone 8:15 pick 56:18 98:17 104:9 132:21 182:10 picked 68:15 174:3 picking 115:22 116:13 118:2 172:13 174:15 picks 87:17 picture 55:13 66:13 pieces 82:15 124:3 pillars 81:15 pixels 94:6,6 placed 53:1 places 14:6 151:1 plain 70:7,19 71:1,22 72:1,13 72:19 please 133:15 153:4 186:6,10 186:11,14 plurality 13:22	89:12 162:5 plus 155:22 156:2,5,6 163:6 point 15:12 51:13 51:21 58:22 60:15 62:17 66:21 68:3 103:4 153:1 171:18 pointed 14:18 16:21 39:2 50:1 52:21 63:10,11 68:5 76:10 101:3 122:19 151:13 170:18 176:19 pointing 162:9 167:10 poll 95:18 pooling 145:3 portion 69:21 POSA 152:21 POSITA 63:18 70:20 71:6 73:20 74:4,4,17 74:18 76:1 77:6 79:19 80:4,15 81:14 84:10,12 97:1 113:9 121:17,20 122:16 123:13 position 28:19 positioning 57:12 possible 64:2,4 132:12,13 possibly 132:20 post-layer 177:7 potentially 15:8 43:9,11 134:21 141:1 pre 11:1 pre-layer 177:6 preamble 11:2 133:21 134:3 predictions 130:8 predictive 84:8 premise 140:15	present 171:11 presented 108:9 Presumably 11:15 presynaptic 161:7 pretty 14:7 20:8 78:19 79:2 previous 35:17 77:20 119:13 177:19 178:4 previously 108:3 134:7 139:6 142:17 148:17 primary 81:15 prior 25:4 26:8 32:13 34:21 44:7 45:6 46:3 48:11 49:12 56:10,19 57:2 182:16 185:11 probabilities 15:10 21:20 probability 158:3 probably 126:10 128:15 probing 32:20 Procedure 186:14 process 79:12 128:7 131:4 172:1 173:3,11 173:18 174:20 175:1,4,8,9,19 176:20 182:15 processing 30:7 80:18,21 81:1 89:6 processor 88:10 89:3,21 90:7 99:5,8 123:8 processors 86:21 86:22 87:6,7,7 87:11,12,22 88:3 123:16,17 124:2 profile 150:19
--	--	--	--	--

propagating 130:12	123:10	17:16,19 19:13	86:13,13,19	184:1,4,5
propagation 127:20 128:12	provides 62:1,11	20:15,22 21:10	87:5,17,21 99:5	recorded 187:10
128:12,19	84:4 115:12	21:22 22:12	124:2	187:14
129:20 130:1,6	151:10 163:12	23:19 34:4 37:4	reader 112:11	recurrent 130:14
130:17 166:1,3	180:14	37:19 56:22	145:6	redirect 184:3
propagations 128:2	providing 42:18	64:1 66:5,9	reading 39:17	refer 64:5 111:14
proper 128:2	70:6 72:16	85:4 137:9	60:11 63:19	142:8
165:22	157:20	143:16 183:16	67:3 70:6 73:20	reference 7:2
properly 107:2	PTAB 50:10,22	184:3 186:14	74:11,17 79:19	76:16 148:16
126:13	131:22 132:3	187:10,13	79:20 80:4 81:5	149:3,10
properties 89:17	Public 2:8 6:3	quite 159:13	84:10,12 97:1	referenced
90:22,22	185:7	quotations 69:15	113:9 121:17	136:10 142:3
proposed 19:22	published 128:15	quote 50:9,22	121:20 122:16	186:6
20:3 23:17	128:18	quote-unquote	135:10 137:4	referred 39:8,21
68:17,19,21	pulse 161:7	150:16	172:9	78:13 140:3,14
69:10,13 70:16	purchased 186:8	quoted 69:18	ready 186:6	180:5,6
83:8 114:19	purposes 160:10		real 112:17	referring 71:5
116:4	put 6:11 19:6	R	really 48:19	77:5 97:4,8,15
proposing 21:4	56:19 58:15	R 3:1 4:1 139:1	84:22 107:10	103:18 105:13
109:16	118:9 146:7,9	random 104:9	143:9,13	107:7 123:7
prove 120:22	155:5 167:14	125:19 176:8	145:17,20	135:1,6 136:2
121:1	182:2	randomly 102:2	167:7	136:17,21
provide 28:11	putting 147:10	181:13	Realtime 2:7	137:2,5 153:14
32:7 41:9 44:20		randomness	185:6	168:10,14
45:3 47:3,16	Q	183:8	reason 7:14 9:22	180:11
48:2 55:6 62:14	question 7:20	range 83:3	recall 58:20,22	refers 135:18,21
63:3 64:4 70:10	13:2 14:16 17:8	rate 128:5 148:12	59:2	136:18 161:22
83:7,17 86:11	18:11 19:4	rates 148:12	receive 162:8	refresh 64:15
115:13,15	22:22 24:4 26:5	re-T 63:7	received 6:17,22	regard 37:21
119:3 121:9,10	32:22 42:2	reach 96:4 97:18	7:4,8,10 65:2	48:10 51:16
126:21 127:1	43:22 45:11,12	read 41:8 42:21	119:10	regards 16:12
135:5 142:14	45:16 47:20	43:12 46:11,13	receives 162:11	22:14 25:4 26:7
147:6 151:8	48:5 49:21	46:16 49:13,13	receptive 171:12	27:6 32:13
provided 26:6	50:10,18 59:6	55:22 56:4	recess 53:21 98:8	34:20 42:21
27:6,10 32:3,6	61:1 63:8 68:12	58:16 61:9	138:20 183:13	44:19 45:8,18
32:10 34:5	73:17 77:21	66:22 67:13,17	183:21	46:3 47:12
37:20 39:13	79:6 86:17	71:4,5 73:22	recognizes	48:10 49:12
40:15 45:7 47:8	96:18 105:11	74:1 75:22	105:21	52:9,22 56:7,9
52:9,12 67:1	109:3 121:1,7	78:16 80:1	record 6:12	56:10 92:5
68:13 70:17	124:13 126:7	81:13 121:16	53:20 54:2	129:9
71:8 73:21 74:1	134:10 145:21	121:17 123:13	71:13 98:6,7,8	Registered 2:6,7
74:18,21 75:1,4	150:3 153:3	138:13 165:6	98:10 138:19	185:5,6
80:9 119:11	154:13 159:15	168:13,19	138:20 139:4	relation 146:3
121:8,10,13	163:13 166:6	169:5 171:4	143:12 152:9	relationship
	167:13,20	175:5 179:15	152:17 153:2	29:22 30:3 72:7
	168:3 177:14	187:6	183:12,13,15	72:11,15 73:2,6
	questions 8:18	readable 86:4,4	183:19,20,21	relative 162:22

185:17,18 relevant 16:1 rely 45:2,13 178:3 relying 47:15 remaining 124:3 remember 59:4 59:13 63:15 64:3 REMOTE 2:1 REMOTELY 1:15 remove 173:6 removes 176:16 removing 172:2 173:5 176:21 render 46:1 69:20 rendered 46:2,18 47:1 48:9 49:11 56:6 rendering 45:17 48:12 49:10 repeat 105:17 152:17 repeated 27:17 rephrase 59:8 73:10 reported 1:19 185:9 reporter 2:6,7,7 2:8 53:16,18,20 54:1 98:7,9 105:16 129:21 138:19 139:3 157:12 178:1 183:12,14,20 183:22 184:5 185:5,5,6,7 represent 91:20 94:16 97:3 representation 29:21 30:4 38:16,22 39:15 43:4 58:2 73:2 73:5 85:8 91:6 91:17,18 92:16	92:22 93:3,7,11 94:16 95:13,14 96:7,12 97:12 97:15 99:11 representations 14:1 29:6 81:20 88:7,11 89:4,9 89:10,11,20,22 90:9,13,19 91:3 91:4,14 92:15 97:9 124:4 129:4 143:21 144:2 representative 113:15 representing 97:1 represents 50:4 94:21 95:15 96:8,15 request 185:16 require 47:17 48:3 requirement 99:10 requirements 91:6,13 requires 29:17 60:17 61:4 123:16 125:11 requiring 66:4 reset 109:3 resistant 117:13 117:17 respect 44:2 49:6 57:5 107:22 response 46:3 responsive 114:5 166:5 rest 118:16 171:4 result 171:1 181:14 resumed 139:6 retraining 127:8 165:21 return 77:20 revert 178:20,20	review 185:16 186:8 reviewed 119:10 119:15,17 Richardson 3:5 right 9:5 10:13 10:21 11:5,14 12:4 13:10,10 14:22 17:22 21:15 24:19 25:1,6,7 26:16 34:13 35:14,19 36:4 40:20 43:10,20 44:5 49:18 52:20 53:19 54:17 55:8,14,21 56:3 56:14 57:7,8,13 57:16,17,18 58:8,19 60:14 60:14,20 61:6 61:17 63:13 66:16 68:15 71:2 72:4 74:14 75:10,16,20 76:3 80:11,20 80:22 81:8 85:10,18,22 87:3,14,18 88:1 91:7,14 92:6,11 92:19 93:9,12 93:15,18,21 94:11,17 96:9 96:16 97:20 99:6,17 100:11 101:15 102:5 102:12,16,21 103:17 104:10 104:16,19 106:12 108:6,7 108:10,13,14 109:8,10,14,19 109:20 110:10 110:15 111:3 112:22 114:13 114:15,17 115:11,19	118:12 119:2,9 120:3 123:1,2,8 124:18 125:15 133:6 134:8 136:13 138:11 142:20 144:6 144:20 147:14 148:22 149:3,7 149:22 153:12 154:22 158:12 158:17,19 161:2 163:2,20 164:18 166:17 167:18 171:1 172:10 173:15 175:8 181:22 right-hand 178:14 robot 174:17,19 181:21,22 182:3 robotic 165:3 167:17 168:15 168:18 171:11 172:1 173:3,7 173:11,18 175:8 176:20 181:3,8,19 rodeo 119:6 romanette 94:15 94:21 96:5,8,14 room 8:16 roughly 29:2 62:1 row 177:5 rows 156:14 158:20 Rules 186:14 run 147:18 running 90:7 S S 3:1 4:1 5:7 139:1,1,1 Saber 1:14 2:2 5:4,18 6:1,7,17 54:4 64:5 71:21	139:5 185:10 186:1,4 187:5 188:9 sake 94:19 saved 64:18,19 savvy 79:22 saw 95:8,9,11 saying 29:17 104:12,17 105:19 113:19 117:20,22 137:1 170:10 172:12 says 12:11,15 13:18 33:9 34:15 35:7,20 36:8 38:11 39:3 42:5 54:13 55:10 60:7 61:9 64:11 74:5 78:9 82:9 86:11 91:17 92:18 94:15,20,21 96:5,8,14 97:3 103:6,7 105:11 135:17 136:17 140:2 150:8,15 150:18 152:14 152:19 153:20 158:16 165:2 168:13,22 171:10,21 172:16 175:3 175:17 176:20 179:6,11 180:3 181:2,7 scene 94:5 scenery 90:3,4 91:3 schedule 148:12 scheduling 128:5 scheme 128:6 scientifically 110:3 screen 9:1 85:17 104:18 107:5 search 12:19
--	--	---	---	---

59:6,16 63:17 66:2,3,4 88:16 129:19,22 searchable 65:16 65:20 second 11:4,6,9 11:12,13 36:10 36:12 60:9,18 61:6,11 62:7,20 63:7 64:17 65:4 67:11 71:10 77:11 92:12 93:17 94:22 95:5,16,19 96:15,19 100:4 100:10,20 103:17 104:16 104:22 105:1,5 106:2,8 111:2 113:17 115:11 115:19 116:21 119:22 120:6 122:3,10 123:6 123:19 124:9 125:13 126:1 127:5 132:10 132:15 135:17 135:18,19 162:21 163:18 169:20 177:22 178:3 179:1 seconds 95:9,17 section 34:7 61:8 73:13 75:22 78:17 153:19 168:12,14,20 179:20 180:2 182:8 sections 74:2 172:18 sedan 132:15,16 132:18 see 9:17 11:16 12:5,6,11,14,15 13:16,18 14:11 14:15 18:6,9 19:5,20 20:10	21:2,9 22:7 23:2,14 24:6,10 24:10 25:14 28:7 29:5 30:17 31:8 33:9 34:2 34:2 35:7,10 36:20 37:1,3,16 38:10 39:3,18 43:12 53:2,7 55:9 56:7,20 58:7,10 59:5,14 60:2,10 61:21 62:10 63:16 64:14 70:18 74:16 75:14 76:14,16 78:8 82:9 85:20 86:6 88:8,14,19 89:5 89:6,15 90:18 91:16 92:14,16 95:1,17,18 99:2 99:3,14 100:5 101:6 103:10 109:4,19 114:9 122:9,12 128:14 130:5 131:22 133:14 133:18,21 134:3,5 135:20 137:13,18 139:19 140:5 140:20 143:22 145:19 146:16 146:17 148:18 150:5,12,15,19 153:9,11,19 155:7 159:4,12 159:17 160:3 160:14,21 161:10,14,17 161:22 162:2,6 162:9 163:8,11 165:5,16 168:10,12,21 169:4 170:3,18 171:5,8,13,17 172:4,16,22	174:7,9 175:14 175:16 176:5,6 178:17,18,18 178:20 179:9 179:14 180:3,7 180:12 182:13 seeing 13:6 17:10 17:14 19:14 22:1 125:10 seeks 105:16 129:21 157:12 178:1 seen 23:22 143:19 selected 148:11 186:10 self-organization 169:22 170:5 170:22 send 175:4 sending 65:6 sense 29:11,11,21 35:12 87:11 95:19 114:8 124:13 140:18 141:20 145:14 151:17 sensor 90:8 sensors 89:22 90:2 124:1 sent 8:2 sentence 35:11 63:15 67:15,19 73:18 74:5,7,9 74:17 76:5 77:17,18 116:1 116:1,13,15,16 117:9 118:6,16 118:18 126:10 150:1,5,8,14 152:13,19 164:10 165:2 167:9,14,17 168:10 169:20 171:3,6,9,15 172:20 173:2 174:15 176:19	178:15 179:6 179:11 180:4 180:21 181:1 sentences 172:9 172:13,14 173:20,21,22 174:3 176:2 182:10 sequence 13:20 89:11 sequences 12:16 13:20 14:20 series 61:22 106:14 113:5 137:9 160:17 serves 149:18 151:3 set 28:22 30:14 31:4,5,20 34:13 35:21 56:21 80:5,12 87:8 97:12 104:9 109:19 124:22 125:2,6 132:9 132:10,11,14 143:7 145:15 147:21 148:1 148:11 151:7 154:1,6,10,15 158:2 163:6 167:4,8 168:4,6 173:8 174:7 177:10 181:15 181:15 185:20 sets 29:7,12 30:11 31:19 33:4,11,16 34:18 35:9 36:3 36:9,12,17 37:11 43:21 44:4,4 46:9 47:5,18 48:4,22 49:19 50:17 51:3,15 52:1 55:20 56:14 57:4,7,18 58:1 59:11 60:4,9,18	61:6,11,14 62:6 62:20 66:16,21 67:6,11 68:5,10 72:2,10,19 73:8 73:15 74:11,20 75:1,8,16,17,20 76:12 77:10,15 78:3,22 79:5,7 79:14,17 80:11 80:22 81:3,22 82:6 83:1,4,21 100:3,9,20,21 101:22 102:11 102:14,20 103:2,14,16 105:5,7 106:2,6 106:21 108:5 109:8,13 111:2 112:21 113:16 114:12 115:10 115:18 116:7 116:20 118:9 119:20,22 120:2,6,9,12,20 121:14 122:3 122:14,22 123:6,18 124:8 124:17,20 125:13,14 126:1,2 127:5 127:15 129:1 131:10 132:7 138:6 158:2 165:18 setup 125:19 158:3,3 159:10 seven 178:15 179:4 shape 97:21 share 8:22 sheet 186:11 187:11 188:6 shorthand 2:6 185:13,15 shot 50:13 show 38:15,21 39:14 67:8
---	---	--	---	--

117:5 126:19 127:1 129:6,14 131:11,12 144:18,22 145:1 146:19 146:20 161:6 162:13,18 174:12 showed 172:19 showing 55:17 58:17 63:3,11 93:6 131:8 160:17 shown 39:3 42:5 43:3 78:9 110:10 111:6 145:18 146:16 146:18 159:18 160:21 162:18 163:16 shows 38:9 41:14 56:13 66:15 115:8,9,17 116:7,19 side 57:6,7,12 117:14 161:10 sign 186:7,8 signal 30:7 signature 185:20 186:6,12 187:4 187:17 188:22 signed 186:11 signing 186:10 similar 40:1 102:4 132:5 139:21 140:4,7 simple 112:10 115:6 152:16 152:21 simplified 112:10 112:16 simplifying 82:2 simulated 149:19 Sincerely 186:18 single 26:20 27:22 67:15 73:18 74:5,7,9	74:16 76:5 81:10 83:18 115:2 118:5,6 122:1 sir 6:15 7:15 8:1 8:7 9:11,20 11:18 12:1,6 13:16 14:19 16:4,18 19:5 23:19 25:22 27:1,15 28:20 30:22 32:18 36:5 45:11 47:6 48:19 52:17 55:1,3 56:3 65:9,17 70:22 79:20 92:3 98:12,13,19 99:19 107:7 115:16 119:11 123:9 124:11 139:10,16 148:21 149:3 159:16 167:14 169:19 172:10 178:11 sit 59:16 sitting 17:22 37:9 49:17 six 139:18 178:14 179:4 182:4,6 size 93:21 94:2 94:14 skill 63:18 67:3 74:12 95:3 135:9,11 skip 182:9 slightly 144:12 small 148:1 Smith 4:5 186:1 Socialize 179:8 soft 158:2 software 86:10 somebody 122:15 168:5 sorry 53:9 70:14 73:8 86:1 133:9	149:9 151:16 Sounds 53:13 149:11 sources 180:5 space 149:21 150:10 spaceship 172:15 spans 178:22 sparse 150:9 sparsely 170:1 spatial 149:18 151:4 speak 97:7 119:7 132:3 149:1 speaking 18:8 31:7,16 33:3 57:14,19,22 58:6,12 87:15 88:2 91:8,10 101:16,17 102:6 105:1 108:8 109:9,11 110:16 115:20 125:16 142:6 144:9 148:4,6 165:10 spec 108:19 131:13 Specialist 3:14 specific 16:11 18:12 22:15 25:2 26:10 28:15 30:19 32:4,14 34:22 36:7,14 37:19 38:2 39:11 40:14 41:10 43:16 44:9,21 44:22 45:8,9,12 46:2,5,20,21 47:13 48:15 49:15 50:6 51:6 51:11 52:10 61:8 103:5 128:10 166:22 171:16 specifically 21:1	22:14 25:14,16 25:18 27:11 31:10,13 34:2,5 43:15 48:17 51:8 52:13 56:9 59:3,5 68:6,9 69:18 73:14 75:2 79:6 166:11,20 specification 16:21 18:15,17 18:18 22:2 41:8 42:21 45:19 46:10,14,15,17 47:9,11,14 48:11 49:8,14 50:2,21 51:2,14 51:18 56:5 58:21 63:19 65:6,13 67:19 68:3,14,14 69:10,12,16 70:10,12,18,21 71:6 74:1,11 81:6,13 82:15 83:11 88:22 93:6 108:20 118:11,15,17 118:19 120:11 121:11,20 122:16 123:11 123:13 129:3 174:5 specifications 67:16 69:18,22 73:19 74:8 121:9,17 specifics 13:6 17:10,13,14 18:6,10 19:6,7 19:14,20 20:10 20:12,19 21:3 22:7 23:3,4,15 24:6,9 26:12,13 27:9 28:7 30:17 31:9 36:21 37:1 37:3,16 41:3,7	41:9 42:8,20 43:12 125:9 170:15 specified 56:21 spent 177:12 spots 168:9 ss 185:2 stand 139:7 standard 69:20 start 9:6 11:1 37:22 41:3,4 44:1 98:20 123:22 140:22 147:9 168:12 168:15 starting 13:15 32:9,10 38:18 38:19 39:2,18 40:5 42:4 50:2 51:5 52:3 53:3 55:2,5 58:17 76:14 78:5,8 82:18 87:20 120:14,15 130:3 153:17 159:8,14 160:7 starts 11:17 60:3 65:11 90:5 98:22 154:21 165:17 169:20 state 2:8 6:3 160:18 162:14 185:1,7 statement 166:19 states 1:1 176:17 176:21,22 stating 100:15 steps 87:12,22 174:18 stop 97:20 144:5 store 40:2 storing 12:11 86:4,13,20 87:4 story 132:19 straightforward 152:14,15,20 152:21
---	---	--	---	--

stream 88:6,11 89:3,8,9,21 90:9,18 99:11 Street 1:21 3:6 4:6 186:2 187:1 188:2 strictly 169:8 170:19 174:13 structure 14:16 15:7 23:8 92:22 93:2,8 94:9 130:16 144:15 144:18 structured 19:15 structures 40:3 84:8 90:13 91:19 93:11 95:12 99:11 structuring 76:21 studied 10:12 25:6 26:17,18 27:16 45:5,6,16 45:20,21,22,22 48:8,11 49:8,9 149:2 studying 23:21 stuff 7:13 11:7 15:15 62:10 108:13,16,19 126:21 style 14:3 submitted 162:13 substitute 9:18 133:5 Suite 1:21 3:6,15 4:6 186:2 187:1 188:2 superscript 175:17 support 10:20 12:19 18:17 44:19 47:4,16 48:2,21 52:14 52:22 53:6,8 55:10 56:7 61:20 62:1,4,11	62:13,14,15 69:2,6,10,12,14 70:1,10,17,18 71:7,8 73:13,20 73:22 74:17 82:16 83:7,8,10 83:15,17 84:17 85:20 86:14,16 88:13,21,22 101:4 112:2 113:6 114:22 115:12,14,15 120:10,14,16 121:9,11,12,19 124:5 133:10 135:5 supported 55:7 61:16 112:22 114:20 131:19 supporting 64:11 supports 64:12 116:3 121:22 supposed 141:20 141:21 sure 6:10 9:1 14:6 17:18 29:18 37:10 44:6 45:15 70:4 71:11 83:22 102:8 110:20 111:10 115:3 133:16 146:5 152:9 153:1 154:11 164:21 180:22 surprise 50:11 surrounding 89:17 SW 3:15 sworn 6:2 139:6 185:12 synapses 149:21 synopsis 141:13 142:3 151:4 synaptic 141:1 150:18 161:8 synonymous 72:9	system 42:7 103:13 108:21 110:1,12 111:15,19 112:12 113:10 113:20,21 114:1,8 118:14 121:18,22 122:6 125:20 system's 122:17 systems 38:13 39:5 77:4 78:10 79:9 82:10 84:3 84:6 129:4 T T 5:7 60:15 139:1 table 92:16 take 7:18 15:2 18:13 53:12 64:15 75:10 76:7,13 98:1,6 126:5 127:18 132:5 133:11 138:18 143:9 143:11 148:15 153:8 155:18 170:11 178:7 182:2 183:10 183:18 taken 10:7 53:21 143:18 185:15 takes 90:8 148:13 talk 34:9 35:19 35:20 46:21 48:14 54:4,7 75:1,19 98:14 102:8 107:21 140:22 167:2 talked 100:1 134:7 164:14 164:16 talking 10:4 31:10 34:19 42:15 52:16 57:1,3 75:7,17 76:14 79:10	82:5 86:12 103:1 104:11 104:22 105:1 107:16 114:2 114:10,11 128:11 129:10 130:11 135:7 141:9 144:11 151:12 153:9 153:15 159:11 160:7 162:2,4 166:12,20 167:5 168:15 169:6,8,9,12,14 169:16 170:21 171:8 173:9 174:13 176:12 176:12,13 178:19,21 180:8,13 talks 29:5 38:19 39:19 40:6 42:8 42:9,10,13 52:4 82:18 83:3,12 86:3 129:18 130:5 133:13 149:17 167:5 teach 127:19,21 140:21 174:16 tease 104:13 technical 30:8,8 72:21,21 73:19 73:22 74:8 171:16 174:1,4 175:2 182:12 technically 67:21 79:22 104:8 132:4 135:5 182:9 techniques 77:8 130:11 Technology 3:14 tell 7:14 18:1 19:8 41:13 49:17 50:8 54:21 58:11 59:17 66:11	85:3 96:22 116:14 154:21 158:21 159:20 172:20 telling 116:10 172:16 174:22 tells 179:20 ten 95:17 ten-minute 98:4 98:6 183:18 term 16:20 146:2 146:6 terminology 143:15 terms 13:7 71:1,2 71:4,5,7,22 140:17 Tesla 1:4 5:12,14 6:19,21 7:3 148:19,20 186:3 187:4 188:8 testified 6:4 139:7 testify 185:12 testimony 27:2 37:14 44:8 49:2 Texas 3:7 text 69:17,19 Thank 88:18 98:13 theme 132:6 theta 168:22 thing 9:2 43:1 82:19 161:8 177:9 178:19 things 10:18 20:9 30:2 47:7 64:10 64:11 66:3,5 79:5 82:3,4 86:10 88:5 109:16 114:2 118:3 122:5 123:2,9 128:6,8 128:10 145:18 158:6 166:16 167:22 168:21
--	--	--	---	---

170:13 think 10:3 19:4 19:19 22:21 25:13 26:3,12 27:1 28:5,19 36:1 37:13 41:17 42:1 49:1 49:3 64:3,9 65:10 68:11 72:3,4 73:16 74:6 97:20,21 98:3 100:7 104:12 108:3 117:9 118:20 119:19 120:18 124:12,13 129:16 135:3 136:11 138:17 142:4,20 146:5 154:11,18 164:14 168:2 171:3 173:10 thinking 75:2 third 11:4,10,12 11:13 33:12 93:20 102:11 102:15,21 103:1,3,14 105:8 106:7 120:2,9 122:4 122:13 123:7 123:20 124:9 125:14 126:3 132:11,16 133:14,19 134:8,11,12,18 134:19,22 135:1,7,8,12,12 135:14,15,16 135:21,22 136:1,2,3,3,4,5 136:6,9,9,11,12 136:16,18,19 136:20,21,22 137:2,3,3,5,6 137:17,21,22 138:2,3,8,8,10	138:12,14,14 138:15 thorough 76:8 three 110:14 111:6 139:17 142:19 179:3 182:3 thrown 176:2 time 28:11 44:11 44:18 47:2 75:11 76:8 89:17 91:1,20 94:17,22 95:4,5 95:6,11,16,19 95:20 96:9,16 96:19,20 97:2 97:10,17 99:19 126:15 127:12 133:11 148:13 151:20 158:4 184:6 185:15 186:13 times 7:17 22:22 24:4 26:4 28:14 46:12,13 48:6 50:19 68:2 84:12 title 82:8,13 179:20 today 7:15 17:19 34:9 37:9 175:6 told 16:19 32:19 46:12 top 55:10 58:22 59:4,14,17 74:15 75:7,14 76:9 179:4 track 10:4 TRADEMARK 1:1 train 127:13 130:13 147:20 148:13 trained 22:9 84:16 127:4,6 129:15 131:7 132:4 148:10	169:1 175:13 training 15:17 127:8,22 128:7 147:20 148:10 165:3,8,11 166:7,11,14,16 167:16,21,22 168:7,10,13 171:1,5,12,22 172:17,20,21 173:7,10,19 174:6,19 175:11 176:3 176:16 177:17 transcribed 185:13 transcript 119:2 185:14,16 186:6,7 187:7 transcription 185:15 187:10 187:12 transcripts 119:9 transfer 15:14 transform 53:5 91:1 transformations 15:13 169:4 transforms 156:4 transition 155:21 trial 1:2 50:14 119:1 trick 109:3 tries 145:9 trivial 110:5,18 114:6 trivialize 113:18 trivializes 111:17 trivializing 117:2 118:1,3 troubling 182:19 true 33:19 45:4 45:13 120:3 185:15 187:9 187:11 truth 7:14 185:12 185:12,12	try 7:18 17:3 66:1 118:8 121:1 126:12 140:15 141:2 144:14,17 145:14 trying 32:17 72:17 112:19 113:22 116:2 116:14 141:7 172:13 174:16 turn 9:9 35:3 54:21 59:20 134:2 139:10 149:5 169:17 Turning 151:2 twice 75:16 twisting 27:3 37:15 two 8:2 30:1,1,2 64:19 92:9 110:15 119:20 120:11,12,20 121:4,14 124:16 126:11 132:20 139:17 142:19 143:2 147:7 162:20 163:17 164:1 169:13 172:9 172:13,14 173:20,20,22 174:3 179:3 180:5,9 182:3 two-dimensional 145:2 type 15:14,16 17:15,15 20:15 29:13,19 58:9 72:11 73:1 82:19 92:18 93:15 161:8 166:11 types 24:18 typewriting 185:13 typewritten	185:14 typical 110:8 162:3 typically 57:10 57:15 130:18 142:7,22 146:6 146:11,12,19 147:9 typo 152:10 U U.S 55:10 unable 17:22 19:2 26:19 27:21 48:19 underlying 10:20 underscore 161:19 162:7 understand 10:15 11:5,11 13:8 15:6 16:20 31:2,17 32:19 44:6 45:15 60:22 67:13 69:4 70:22 71:21 74:6,13 77:7 80:1 81:17 95:4 104:12 105:10 112:11 114:4 118:22 119:19 122:15 122:17 124:10 135:11,15 137:4 151:3 154:14 157:17 158:11,13,15 163:17,22 173:5 181:17 understanding 11:22 13:12 32:18 38:8 67:4 80:16 81:14 84:13 90:10 92:21 117:11 121:18,22 123:14,15 134:17 147:13
---	--	---	--	--

158:18 161:18 161:21 understandings 173:18 understands 50:15 understood 72:20 141:5 147:1,2 unfamiliar 20:18 unit 38:14 76:15 76:19,21,22,22 77:2,2,6,14,19 89:7 162:8 UNITED 1:1 units 162:1,5 unpatentable 9:19 unusually 152:15 152:21 update 127:9 153:11 167:21 167:22 updated 166:8,15 166:16 174:8 175:13 updates 169:4 176:4 180:4 updating 165:11 165:12 167:7 168:8 177:11 177:13 upgrade 127:10 upload 59:15 64:17,20 uploaded 6:12,14 6:19 7:21 64:21 65:9 148:17 use 47:8 69:20 106:15,16 128:6 user 178:20 user's 14:2 users 178:16 179:7 uses 75:16 103:15 133:18	usually 15:13 144:3 utilize 130:14 utilized 38:14 utilizing 15:18 V v 1:6 186:3 187:4 188:8 vacation 126:20 127:2 values 146:7 variety 143:8 176:5 various 38:12 47:7 89:16 90:21 151:1 171:10 vector 153:12,12 157:6 163:7 168:22 169:1 175:18,20 180:9 vectors 169:6 180:10 venture 167:8 versa 148:6 version 148:8 versus 128:3 130:12 134:22 135:7 vertex 29:8 vice 148:6 VIDEOTAPED 1:14 2:1 view 11:8 viewing 182:18 visual 145:7 visualize 110:2,4 VON 3:13 vongunten@fr.... 3:18 W W 169:2 175:17 175:18,21,22 180:9	waive 186:9 walk 51:19 127:20 walked 18:15 want 8:18 25:14 35:19,20 50:8 50:11 51:20,21 54:9,11,21 63:7 71:11 77:22 80:6 82:20 84:19 85:4,12 98:20 99:19 102:8 103:4 107:8,21,21 111:14 112:14 113:18 120:21 132:21 139:13 149:5 152:11 154:11 167:15 180:21 182:9 182:10 wanting 117:13 Washington 1:21 3:16 4:7 186:2 187:2 188:3 wasn't 161:5 163:13 way 8:9 65:13 67:2 76:2 86:2 87:16 107:2 125:18 127:17 142:20 146:13 146:14 148:10 152:7 160:19 ways 146:12 183:1 we'll 75:12 127:19,20,21 131:22 140:21 we're 9:1 10:4 26:21 52:16,17 53:20 54:1 97:21 98:7,9 109:5 115:7 138:19 139:3 141:7 166:19 183:12,14,20	183:22 184:5 we've 7:18 16:15 28:19 53:11 97:22 107:15 114:2 138:16 142:17 151:12 159:10 173:8 weight 146:9,20 147:5,6 148:7 150:18 151:9 152:3,4 153:11 154:7,7,9,20,20 154:21 155:1,3 155:6,10,15,15 155:17,18,20 156:2,4,7,13,16 156:19,22 157:2,3,6,7,8 157:10,17 158:7,10,14,21 162:17 163:3,7 163:12,15,21 169:6,7 174:10 174:11,11,11 175:18,20 176:8 177:5,15 177:18 178:5 180:4,9,10 182:2,5 weighting 147:7 weights 15:9,9 21:20 130:7 146:2,4,6,17,18 147:1,3,10,12 147:17,21 148:1 151:7,8 151:12 152:3,5 153:15,16,21 154:2,6,10,15 155:5,8 156:16 156:18 158:13 158:15 162:16 163:4,8,11,12 163:22 164:9 165:11,12,22 166:8,15 167:4 167:8,21 168:4	168:7,8,16 169:2,6,7,8,13 169:14,16 170:19 173:8 174:7,13 176:4 176:7,11,13 177:3,11,11,14 181:8,10,10,12 181:14,15,16 181:18,20 182:4,7,16,16 183:5 welcome 50:22 98:12 well-known 30:7 128:13 well-tuned 143:15 WESTCHEST... 185:3 WHEREOF 185:19 whichever 71:4 136:8 WIJ 147:6 witness 5:2 7:9 13:1 15:22 16:9 17:8 18:5 19:19 20:7,21 22:6,21 23:13 24:3 25:13 26:3 27:1 28:5 30:16 31:7 32:2 33:6 34:1 34:15 36:20 37:13 39:17 40:22 41:17 42:1 43:7 53:13 53:19 58:5 59:13 60:22 61:20 62:9 63:1 64:13 70:4 100:13 105:10 105:17 108:16 111:10 112:5 113:2 117:17 129:22 136:16 144:8 145:13
---	---	--	---	---

157:13 166:10 167:3 170:8 178:2 183:17 185:10,11,19 186:8 187:5,17 188:9 wondering 151:18 word 12:5 18:16 33:13,18 35:12 67:15 72:7,20 80:4,12 81:10 133:18 145:11 words 13:7 30:5 58:15,18,18,21 59:1 60:11 65:19 73:4 75:16 80:10 147:16 151:3 180:1 work 24:21 67:16 73:19 74:8 181:16 182:5 working 27:20 works 53:15 67:20 90:11 world 175:6 wouldn't 101:22 103:20 104:8 141:16 145:16 163:9,10 164:3 164:8 write 67:18 175:3 written 47:4 59:3 59:9 67:8 69:5 69:22 73:12 119:15 186:22 wrong 120:22 121:1 wrote 56:11 66:6 68:6 X X 5:1,7 Y yeah 10:9,11	17:18 35:3,17 49:3 52:16 57:11 60:14 71:15 86:18 87:8 94:14 98:5 102:15 107:12 110:16 112:14 113:13 114:4 114:10 118:13 120:4 131:6,14 143:17 144:17 148:18 153:4 154:12 165:6 173:17,22 Yep 148:20 yield 80:15 York 2:9 6:3 185:1,8 Z zero 177:16,18 178:5 zeros 131:2 Zoom 8:12,13,15 71:10 0 1 1 9:14 60:3 82:18 124:15 125:1 142:11 146:8 147:4 155:22 156:2,6 157:1,8 158:16,18,22 159:8,18 160:11 161:9 161:19 162:1,7 162:18 163:1,6 163:16,19,22 164:1,2 181:21 181:22 1:32 139:2 10 40:6 42:15 105:14 10:29 53:21 10:40 53:14,19 53:22	100 38:14 162:4 1000 3:15,15 4:6 186:2 1001 5:12,12 6:20 6:21,21 12:3 1005 5:14,14 7:1 7:3,3 148:19,20 102 162:1,5,8,11 102-1 159:22 102_1 161:10 102_2 161:13 102_3 161:16 102s 162:6 103 38:18 39:2,18 41:4,5 42:4 50:3 51:5 52:4 104 40:5 41:5 42:14 51:6 162:9,10 108 130:2 109 130:4 11 42:15 11,633,474 1:11 110 76:15 77:1,14 112 176:11 12 13:15 29:2 76:20 13 29:2 14 5:10 7:5,7 9:8 15 94:6 106:16 181:8,9,18,20 16 130:3 164 54:22 55:2,5 55:12 168 88:17,19 89:1 89:5 169 90:17 17 38:5,6,9,12,15 38:19,21 39:14 41:4,20 42:22 43:4 44:2,14 45:3,14 47:3,9 47:10,15 48:2 48:21 50:2,16 51:2,9,16,18 52:12 55:14,16 56:1,2,12,13	58:16 63:2 66:13 73:13 107:13,22 109:6 110:10 111:7 112:1,22 113:3,3,15 114:15 115:17 116:19 142:17 143:22 146:16 146:18 1717 3:6 4:6 186:2 173 85:5,11 89:1 1730 1:21 187:1 188:2 176 91:21 92:2,9 92:9 179 150:12 17A 107:5 19- 83:14 190 59:21 75:4 76:1,14 77:13 82:22 83:7,7 114:18,21 120:14 131:17 191 59:21,21 60:5 61:22 62:10 75:7,11,14 76:10 113:4 192 63:2 66:10 67:1,12 68:7 75:9,12 78:5,20 80:9 83:6 107:8 107:11 108:18 113:4 115:21 139:11,15 193 67:1 78:21 80:10 83:1 84:4 101:7 139:11 139:15,18 194 67:2 195 67:2 83:14 196 67:2 197 67:2 1A 32:8 34:7,21 37:21	2 2 65:12,15 124:1 124:15 125:2 146:9 157:2,2,8 157:9,9 161:19 162:7 163:2,19 163:22 164:1,2 182:3 2:55 184:7 20 29:3 171:18 20-some-page 174:4 200 62:1,10 67:2 67:12 68:15 75:5 76:1 82:22 83:7 108:18 113:5 114:21 122:7,8 131:18 20006 4:7 186:2 2001 5:16 6:14,16 20024 3:16 20036 1:21 187:2 188:3 2004 5:19 64:22 65:1,8,9,12 66:8 201 120:15 202 1:22 164:11 164:17 187:2 202)-232-0646 186:15 202)232-0646 188:4 202.370.8300 4:8 202.626.6352 3:17 2024-00745 6:13 2025 1:16 2:4 185:10,20 186:4,20 187:5 188:10 203 149:5,6,9,17 151:2 164:16 205 171:19 173:20 211 122:12 212 120:17
--	---	--	--	--

214.747.5070 3:8	110:8 111:13	74 159:9,14 160:7	120:16 121:11	95 180:7
225 178:7,13,21	111:19,19	162:2	123:7 135:20	97 175:15
178:22 180:20	112:12,18	75201 3:7	136:1,17	98 169:12
181:1	113:8,10,19,19	77 165:15	85.15 99:16	98A 122:10
232-0646 1:22	117:10 118:11	78 166:4	85.3 113:17	98B 122:13
187:2	118:14 121:21	79 168:11	85.4 86:3	991 5:20 56:1
26 75:15	122:3,16	7th 185:20	85.5 87:14	58:19 59:5,8,10
28 82:18	123:13 128:8		85.6 87:14	59:14 61:16
	128:11,19,20		85.7 135:19	62:5,18 63:13
3	129:7,12	8	85.8 53:3 54:11	63:16,20 64:1
3 124:1 125:6	4B 92:1,12,14	8 13:14	54:12,17,21	64:14,19 65:2
146:9 157:3,9	4th 185:10	80 104:4	85.9 53:3 87:17	65:10 66:19
157:10 161:19		812 1:21 95:13	87:20	67:9 68:3,22
162:7 169:13	5	187:1 188:2	852 39:20 40:2	69:5,11 73:9,11
175:15 180:15	5 65:12 156:14,17	85 9:6,17 10:1,2	42:9,14	75:4,15 81:18
182:14 183:6	162:7 176:6	10:13,15,20	853 39:22 40:7	83:19 121:3,21
30 181:9,10,19	183:7	11:1,2 53:2,2,5	42:11,16	129:12 139:14
32 82:18	50 95:9 160:16	98:18 123:1,15	139:21 140:4	
33 165:20	500 94:6	123:21 125:11	86 133:22 134:3,3	
34 83:13 165:20	5000 3:6	134:4,7,13,16	134:3,15,15	
38 122:10	56 27:7 33:7	134:20,22	137:14,22	
	35:12,12 38:11	135:7,13,16	8721 75:15	
4	38:19 39:3 42:4	136:7,12 138:1	88 169:17,20	
4 1:16 2:4 124:2	45:8,18 46:19	138:11	170:21 171:10	
133:2 153:10	51:10 52:9 56:9	85.1 11:16 35:3	89 133:1,4,13,21	
153:11 156:17	133:5 152:14	123:22 135:17	134:11,14,18	
162:7 164:2	152:15,20	85.10 88:6	135:12 136:6	
169:14 180:11	57 27:7 45:9,18	85.11 84:20 85:2	136:12 137:1	
180:15 182:15	46:19 51:10	85:22 91:5,11	168:19,21	
183:7 186:4	52:10 56:9	92:5 93:10 96:5	89.1 133:18,19	
187:5 188:10	138:7	96:6 97:1,5		
40 38:11,18 51:5		85.12 94:20,20	9	
52:3	6	96:11	9-0 137:11	
401 180:10	6 5:5,12,16	85.13 60:2 61:4	9:30 1:17 2:5	
406 180:10	106:15 176:7	98:20 99:22	185:11	
41 152:12,18	176:10	102:5 103:7,11	90 60:3 137:9,10	
45 9:18,18 53:5	60 39:18 104:4	104:14,17	137:13,21	
474 5:12 6:13,20	61 33:8 37:22	105:11,19	138:3,10	
6:22 13:11 45:6	62 32:9	106:11 107:22	152:10,12,13	
45:16 46:10	65 5:19 152:6	110:22 111:8	152:18,19	
48:11 49:8	153:9	112:3 114:18	169:5	
51:14 55:8,11	67 42:13	115:7 117:15	90.1 137:16	
56:5 57:2 63:20	69 89:14	119:18 120:7	90s 128:17	
79:19 81:5,13		120:15 121:9	911 59:5	
81:18 82:3	7	129:11 131:17	93 89:7 169:5	
83:17 109:15	7 5:10,14 29:2	85.14 102:4,5,10	94 153:18 169:12	
109:16 110:1,7	70s 128:16	103:5,11 106:4	179:18 180:3	
	71 180:18	106:11 119:19		