

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TESLA, INC., :
Petitioner, : IPR2025-00342
vs. : U.S. Patent
INTELLECTUAL VENTURES II : 7,336,,805 B2
LLC, :
Patent Owner. :
----- :

Deposition of
ADITI MAJUMDER, Ph.D.
Remote Zoom
Wednesday, January 21, 2026
12:00 p.m.

Job No. PA-7771910

Pages 1 - 112

Reported by: Robert M. Jakupciak, RPR

1
2 Deposition of ADITI MAJUMDER,
3 Ph.D., held at the offices of:
4 Veritext - Washington
5 1250 Eye Street, N.W.
6 Washington, D.C.
7

8 Pursuant to Notice, before Robert
9 Michael Jakupciak, RPR, a Notary Public in
10 and for the District of Columbia, when were
11 present on behalf of the respective parties:
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A P P E A R A N C E S

On behalf of the Petitioner:

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C O N T E N T S

THE WITNESS: ADITI MAJUMDER, Ph.D.

EXAMINATION

PAGE NO.

By Mr. Webb

5

By Mr. Theiss

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PREVIOUSLY MARKED EXHIBITS

EXHIBIT NUMBER

DESCRIPTION

Exhibit 1001

U.S. Patent 7,336,805 B2

Exhibit 2010

Declaration of Dr.

Aditi Majumder

(Exhibits attached to transcript.)

1 P R O C E E D I N G S

2 Whereupon,

3 ADITI MAJUMDER, Ph.D.,

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

7 EXAMINATION BY COUNSEL FOR PETITIONER
8 BY MR. WEBB:

9 Q. Good morning, Dr. Majumder. How
10 are you doing?

11 A. I'm doing good. Good morning.

12 Q. Good morning. My name is Greg
13 Webb. I represent the Petitioner, Tesla,
14 Inc., in IPR2025-00342, which involves U.S.
15 Patent 7,336,805, which we may refer to as
16 the '805 Patent.

17 You understand that I'll be
18 asking you questions about the declaration
19 you provided in this IPR; correct?

20 A. Yes.

21 Q. Can you please state your full
22 name for the record?

1 A. Aditi Majumder.

2 Q. Is there any reason why you
3 would not be able to answer my questions
4 today fully, accurately and honestly?

5 A. No.

6 Q. Have you been deposed before?

7 A. No.

8 Q. So this is your first
9 deposition?

10 A. Yes.

11 Q. Lucky you. I'll go over some
12 ground rules then since you haven't been
13 through this before. If you don't
14 understand my question, please let me know.
15 If you answer my question, I will assume
16 that you understood my question.

17 Is that okay?

18 A. Sounds good.

19 Q. And your counsel may object to
20 questions throughout this deposition.
21 Unless he instructs you not to answer a
22 specific question, you are still required to

1 answer my questions.

2 Is that understood?

3 A. Sounds good.

4 Q. The court reporter will prepare
5 a transcript of this deposition today. To
6 ensure that we obtain a clear record of the
7 deposition, please answer each question with
8 a full verbal response such as yes or no and
9 don't rely on uh-huh or head movements.

10 Is that understood?

11 A. Sounds good.

12 Q. And the court reporter may have
13 difficulty accurately reporting who is
14 speaking when there is cross talk. In order
15 to ensure we have a clear record, I would
16 ask that you let me finish the question
17 before you answer and I'll do the same
18 before I ask another question.

19 Is that okay?

20 A. Yes.

21 Q. And during the portion of this
22 deposition where I'm asking you questions,

1 you are not permitted to speak with your
2 counsel about the substance of your
3 testimony, including your declaration in
4 this deposition.

5 Is that understood?

6 A. Sounds good.

7 Q. And I plan to take questions
8 probably in about one-hour segments and we
9 can take ten to 15-minute breaks after each
10 hour. We can plan to take a lunch break
11 around noon Pacific.

12 Is that okay with you?

13 A. Sounds good.

14 Q. Obviously, if you need a break,
15 just let me know. I would just ask that you
16 finish answering whatever question I may
17 have asked you before we take a break. Does
18 that work?

19 A. Yes.

20 Q. And where are you located today?

21 A. I'm in Irvine, California.

22 Q. Are you at your house?

1 A. I'm at my house, yes.

2 Q. Is there anyone there with you?

3 A. My husband works from home, so
4 he is in his home office.

5 Q. You are the only one in that
6 room?

7 A. No. No. He is not in this
8 room. We have two separate rooms.

9 Q. Great. And do you have a phone
10 with you?

11 A. I have a phone with me, but it
12 is put on focus.

13 Q. And do you agree not to use your
14 phone during the questioning portion of
15 today's deposition?

16 A. I will not use my phone.

17 Q. What equipment are you using for
18 this deposition?

19 A. I'm using my laptop.

20 Q. Do you have hard copies of any
21 of the documents from this proceeding in
22 front of you?

1 A. No.

2 Q. Do you have any notes or other
3 papers in front of you?

4 A. No.

5 Q. And I ask you not to have any of
6 those in front of you, if you don't have
7 them in front of you now. As we will talk
8 about, there will be documents, including
9 your declaration, that we will go through,
10 but I'll make sure you have those as I ask
11 questions. In the meantime, I ask you not
12 to have any other documents.

13 A. I didn't understand.

14 Q. I ask that you don't have any
15 other documents open on your computer.

16 A. Yes.

17 Q. Do you have any Chat windows or
18 text messages open where you are
19 communicating with counsel?

20 A. No.

21 Q. I ask you again to refrain from
22 using those during the deposition as well.

1 A. Thank you.

2 Q. Who did you meet with to prepare
3 for your deposition today?

4 A. Whom did I meet?

5 Q. In preparation for the
6 deposition did you meet with anyone?

7 A. I met with Brandon before. Not
8 today.

9 Q. Okay. And approximately how
10 long did you spend preparing for today's
11 deposition?

12 A. Probably I would say 15 hours.

13 Q. Okay. And you provided
14 testimony in connection with IPR 2025-00342
15 involving U.S. Patent 7,336,805; correct?

16 A. Correct.

17 Q. And do you have access to a copy
18 of Exhibit 2010 from that IPR that's titled
19 Declaration of Dr. Aditi Majumder in Support
20 of Patent Owner's Response?

21 A. Yes. It was in the folder that
22 you guys sent.

1 Q. Can you open that document now
2 if you don't already have it open?

3 A. Let me get to it. Yes. I have
4 it open in front of me.

5 Q. Okay. And is Exhibit 2010 your
6 declaration?

7 A. Yes. My declaration.

8 Q. And if I refer to Exhibit 2010
9 as your declaration, you'll understand that
10 I'm referring to Exhibit 2010 in IPR
11 2025-342; correct?

12 A. Yes.

13 Q. Can you please turn to page 82
14 of your declaration?

15 A. Page --

16 Q. It's the last page.

17 A. Oh. Page 82. The last page.
18 That is the page number of the -- okay.
19 That's 89. 82 is where you have
20 discretionary denial is inappropriate? Is
21 that the page you are talking about?

22 Q. I don't think that's Exhibit

1 2010.

2 A. Oh, sorry. Sorry. Let me --
3 Oh. Yes. Sorry about that. I had the
4 wrong one open. 82. Okay. That's the last
5 page. Yes. I see it. I have it, yeah.

6 Q. Okay. Is that your signature on
7 page 82?

8 A. Yes.

9 Q. And did you sign your
10 declaration on October 14th, 2025?

11 A. Yes.

12 Q. Could you please read out loud
13 for the record paragraph 192?

14 A. 192. "All statements made
15 herein of my own knowledge are true, and all
16 statements made on information and belief
17 are believed to be true. Further, I'm aware
18 that these statements are made with the
19 knowledge that willful false statements and
20 the like so made are punishable by fine or
21 imprisonment, or both, under 18 U.S.C. 1001.
22 I declare under penalty of perjury that the

1 foregoing is true and correct."

2 Q. Thank you. And since October
3 14th, 2025 have you acquired any additional
4 information or obtained any supplemental
5 insight that have changed the positions set
6 forth in your declaration?

7 A. No.

8 Q. Do you continue to stand behind
9 all the statements in your declaration in
10 accordance with the statement you just read?

11 A. Yes.

12 Q. And did you prepare your
13 declaration?

14 A. Yes.

15 Q. Did anybody besides yourself
16 prepare the declaration?

17 A. Brandon helped, but I prepared
18 the declaration.

19 Q. So was it a collaborative effort
20 between you and counsel?

21 A. Yes.

22 Q. Did anyone else besides counsel

1 help you prepare the declaration?

2 A. No.

3 Q. And approximately how long did
4 you spend preparing your declaration?

5 A. Oh, I may have to go to my
6 tracking records. Can I open that? I can't
7 remember exactly right now, but it must have
8 been some 20 to 30 hours I would believe.

9 Q. Okay. That's fine. No need to
10 get your tracking documents. Let's turn to
11 page 11 of your declaration.

12 A. Okay. Let me go to page 11. So
13 this is which page number? The PDF or the
14 page number at the bottom of the page?

15 Q. I'm using the page number that's
16 from the document, so at the center, not the
17 exhibit labeling, which would be page 14 of
18 85. I'm using page 11, which is in the
19 middle.

20 A. I've got it. It is the number
21 five that you have there.

22 Q. Correct. So you see the number

1 5, The '805 Patent?

2 A. Yes.

3 Q. Do you have access to a copy of
4 Exhibit 1001, which is U.S. Patent Number
5 7,336,805?

6 A. Yes, I do have that.

7 Q. Okay. Can you open that up?

8 A. Yes. I have opened that up.

9 Q. Is Exhibit 1001 the document
10 that you referred to as the '805 Patent in
11 your declaration?

12 A. Yes.

13 Q. And consistent with the usage in
14 your declaration, can we agree to use the
15 '805 as shorthand for Exhibit 1001, which is
16 U.S. Patent 7,336,805?

17 A. Absolutely we can do that.

18 Q. So if I say a reference to '805
19 Patent, you'll understand what I'm talking
20 about?

21 A. Yes.

22 Q. Let's turn to page 16 of your

1 declaration.

2 A. 16. Okay. Give me a second.

3 Yes. 16. At the bottom there is

4 Sedgewick's textbook.

5 Q. Make sure you see the heading

6 Sedgewick's textbook Algorithms in C.

7 A. Yes.

8 Q. Do you have access to a copy of

9 Exhibit 2006, which is titled Algorithms in
10 C?

11 A. Yes. I do have that.

12 Q. Can you open that up as well and
13 make sure that opens for you?

14 A. Yes. I have it open.

15 Q. And is Exhibit 2006 that you
16 just opened the document you referred to as
17 Sedgewick in your declaration?

18 A. Yes.

19 Q. And consistent with the usage in
20 your declaration, can we agree to use
21 Sedgewick as shorthand for Exhibit 2006?

22 A. Yes.

1 Q. Okay. Let's turn to paragraph
2 14, which is on page 6 of your declaration.

3 A. Let me go to page 6. Which
4 paragraph?

5 Q. Paragraph 14, which is towards
6 the bottom of the page.

7 A. I see that.

8 Q. In paragraph 14 you indicate
9 that in your declaration you use the
10 definition of POSITA as provided by Dr.
11 Rodriguez. Is that correct?

12 A. Yes.

13 Q. And let's turn to paragraph 23
14 of your declaration, which is on page 10 I
15 believe.

16 A. Yeah. I've got it.

17 Q. Here again you repeat the
18 definition of a POSITA provided by Dr.
19 Rodriguez; correct?

20 A. Correct.

21 Q. What is that definition?

22 A. The definition is he is a person

1 of ordinary skill in the art who would have
2 a bachelor's degree in electrical
3 engineering, computer engineering, and
4 computer science, or a related subject, and
5 four years of work experience in image
6 processing, automated vehicle control and
7 navigation, or a related field. That
8 additional education would offset a lesser
9 amount of experience and vice versa.

10 Q. Do you agree with Dr.
11 Rodriguez's definition of a POSITA for the
12 '805 Patent?

13 A. Yes. I do.

14 Q. And have you used Dr.
15 Rodriguez's definition of a POSITA in
16 forming your opinions regarding the '805
17 Patent that are in your declaration?

18 A. Yes, I have.

19 Q. Okay. In the context of the
20 '805 Patent, what's the difference between a
21 mathematical tree and a mathematical tree
22 structure?

1 A. Mathematical tree is similar to
2 mathematical tree structure, but
3 mathematical tree is basically a data
4 structure, that's what we call it, where you
5 have vertices and edges which are connected
6 by a relationship and any two vertices
7 connected by a unique path. P-A-T-H.

8 Q. And does the '805 Patent provide
9 an explicit definition of a mathematical
10 tree structure?

11 A. It refers to Sedgewick.

12 Q. So it does not provide an
13 explicit definition?

14 A. Let me go and look. Just give
15 me one second. It tells -- in a
16 hierarchically organized tree structure in
17 the image data and then it tells many
18 different proven methods for creating and
19 organizing such hierarchical tree structure
20 are available to one skilled in the art.
21 Reference is made here exemplary to the
22 comprehensive compilation and discussion of

1 widely varying tree structures by Robert
2 Sedgewick.

3 Based, yeah. That's what it
4 tells.

5 Q. And do you understand that to be
6 an explicit definition of a mathematical
7 tree structure?

8 A. That is not an explicit
9 definition, but what is provided in
10 Sedgewick is, of course are explicit
11 definition of tree structure.

12 Q. So the '805 Patent itself does
13 not have an explicit definition of a
14 mathematical tree structure?

15 A. Correct.

16 Q. Let's turn to paragraph 36 of
17 your declaration, which is on page 16 of
18 your declaration.

19 A. Okay. Give me a minute. 36.
20 Yes.

21 Q. Please go ahead and read
22 paragraph 36 out loud for the record.

1 A. "Based on my review of the '805
2 Patent and my understanding of the field as
3 a computer vision and data structures
4 expert, it is clear that the patent relies
5 directly on Robert Sedgewick's textbook
6 Algorithms in C to define and ground a core
7 structural component of the invention;
8 namely, the mathematical tree structure
9 recited in the claims and described
10 throughout the specification."

11 Q. Thank you. Is it your opinion
12 that the '805 Patent relies on Chapter 4 of
13 Sedgewick to provide an explicit definition
14 of a mathematical tree structure?

15 A. Yes.

16 Q. And what is your basis for this?

17 A. Basis for?

18 Q. For relying on Sedgewick for an
19 explicit definition of a mathematical tree
20 structure?

21 A. So let me tell you something. I
22 am a professor of computer science. We

1 teach data structures as one of the
2 fundamental courses in computer science. So
3 Sedgewick or other books like Cormen
4 (phonetic) are used in those courses.
5 Right? And tree structure is a very
6 fundamental data structure in computer
7 science and, therefore, I rely on Sedgewick
8 as a fundamental reference for the
9 definition of tree structure.

10 Q. So you rely on that, but does
11 the '805 Patent rely on Sedgewick to provide
12 an explicit definition?

13 A. '805 refers explicitly to
14 Sedgewick for the definition.

15 Q. And so your understanding is the
16 '805 Patent says Sedgewick provides an
17 explicit definition of a mathematical tree
18 structure?

19 A. Yes.

20 Q. Does the '805 refer to Sedgewick
21 as the exclusive definition of a
22 mathematical tree structure?

1 A. Okay. Give me one second. It
2 provides as an exemplary comprehensive
3 compilation, but the definition of tree
4 structure is something almost every computer
5 scientist will agree on. There shouldn't be
6 any discussion on that. It's like it's a
7 fundamental. It's like, it's like the
8 alphabet in a, in a, in words and language.
9 So...

10 Q. And I believe earlier you were
11 reading some of the '805 Patent from column
12 four at line 45. I'll have you turn there
13 so we are looking at the same thing.

14 There it says: "Many different
15 proven methods for creating and organizing
16 such a hierarchical tree structure are
17 available to one skilled in the art"?

18 A. Uh-huh.

19 Q. Does Sedgewick describe all
20 these many different proven methods for
21 creating and organizing a hierarchical tree
22 structure to one of skill in the art?

1 A. Sedgewick provides a collection.
2 By the way, here the focus is on creation of
3 the tree structure, right, not what the tree
4 structure is. So Sedgewick does provide a
5 bunch of different methods to how to create
6 the hierarchical structure, but there is no,
7 there is no difference in what is a tree
8 structure.

9 It can be created in multiple
10 ways and Sedgewick is, may not be completely
11 comprehensive because the state of the art
12 changes over time and there can be new
13 methods found out. But what is a tree
14 structure remains the same.

15 Q. You mentioned that the '805
16 Patent refers to Sedgewick as exemplary.
17 Does that indicate to a POSITA that
18 Sedgewick is being relied upon to limit the
19 scope of the invention?

20 A. Can you ask me again? What is
21 it?

22 Q. Right. So if we look in column

1 4 a little bit further down, starting line
2 47, it says: "Reference is made here
3 exemplarily to the comprehensive compilation
4 and discussion of widely varying tree
5 structures by Robert Sedgewick."

6 Dr. Majumder, my question here,
7 is this reference to Sedgewick as being
8 exemplarily an example of what tells a
9 POSITA that it's being used to limit the
10 scope of the invention?

11 A. Again I will come back to the
12 same point. It cannot limit the scope of
13 the invention because tree is a well-defined
14 mathematical structure in computer science
15 which computer science wouldn't differ on.

16 It is a set of vertices
17 connected by edges where two different nodes
18 has to be connected by a unique path. That
19 definition can not be changed. That's the
20 definition of tree structure.

21 Q. Is the definition of tree
22 structure the definition of a tree?

1 A. I considered them similar, so.

2 Q. So you are treating them as the
3 same?

4 A. Yes.

5 Q. Does the '805 Patent indicate
6 that any of the widely varying tree
7 structures from Chapter 4 of Sedgewick
8 should be excluded from the scope of the
9 invention?

10 A. I didn't see anything that tells
11 that it should be excluded.

12 Q. Okay. So any of the examples of
13 tree structures in Chapter 4 should be
14 considered a mathematical tree structure in
15 the context of the '805 Patent; correct?

16 A. Yes. If it's a tree.

17 Q. And going down to paragraph 38
18 on page 17 of your declaration.

19 A. Give me one second. Paragraph
20 what?

21 Q. 38. On page 17.

22 A. Okay. Yes.

1 Q. Will you please read that
2 paragraph out loud?

3 A. "This is not a passing citation.
4 In my expert opinion, this incorporation of
5 Sedgewick's work performs a critical
6 definitional role. It signals to a person
7 of ordinary skill in the art that the term
8 'tree structure' is to be interpreted
9 according to the formal conventions of
10 computer science as set forth by Sedgewick.
11 In this context, a tree is a connected,
12 acyclic graph with a designated root node,
13 in which every other node is connected to
14 the root by exactly one unique path. The
15 tree structure implies global connectivity
16 and hierarchical organization, not merely
17 any grouping or clustering of data."

18 Q. Thank you. And you say here it
19 signals to a person of ordinary skill in the
20 art that the term tree structure is to be
21 interpreted according to the formal
22 conventions of computer science as set forth

1 by Sedgewick. Does Sedgewick use the phrase
2 "tree structure"?

3 A. Let me go and check because I'm
4 not sure if it's tree structure or tree.
5 But hold on. Let me go to Sedgewick. Give
6 me a second. Okay?

7 Q. Sure.

8 A. So I think they call it just a
9 tree and not a tree structure. But let me
10 see what they call it.

11 I'm going to go to Chapter 5
12 first. Yeah. They call them tree, but --
13 yeah, they call it tree, but tree and tree
14 structure are no different.

15 Q. Okay. So Sedgewick does not use
16 "tree structure", it uses "tree"; is that
17 correct?

18 A. I mean if -- it uses "tree", but
19 when it is, it's using "tree" in other
20 contexts like heap sort, it will use the
21 word "tree structure", because they usually
22 mean the same thing. In computer science if

1 you are going to say tree or tree structure,
2 it's not anything different.

3 Q. Let's turn to page, paragraph 60
4 on page 26 of your declaration.

5 A. Paragraph 60. Give me a moment.
6 Yeah.

7 Q. Is it your opinion that the
8 claim construction you provide in your
9 declaration are the plain and ordinary
10 meaning of the claim terms?

11 A. Yes.

12 Q. Let's turn to the page 32 of
13 your declaration.

14 A. Okay. 32.

15 Q. Do you see the heading B,
16 Storing interrelationships of the plurality
17 of edge segments toward the bottom?

18 A. Yes.

19 Q. What is your construction of
20 storing interrelationships of the plurality
21 of edge segments?

22 A. So it is storing the

1 relationship between the -- for example,
2 whether it's connected or not and those kind
3 of things into a tree structure.

4 Q. And is that the construction you
5 provided in your declaration?

6 A. Yes.

7 Q. And where do you provide that?

8 A. So 74: To support hierarchical
9 search by traversal over relations,
10 (example, parallelism, orthogonality,
11 adjacency) so the system can assemble
12 higher-order shapes such as rectangles from
13 lower-level --

14 COURT REPORTER: Please read it
15 slower.

16 A. I will just read it slowly
17 because it has a lot of technical terms that
18 may be causing the problem.

19 The specification explains why a
20 tree is used: To support hierarchical
21 search by traversal, T-R-A-V-E-R-S-A-L, over
22 relations, in parentheses, example,

1 parallelism, orthogonality, adjacency, close
2 parentheses, so the system can assemble
3 higher-order shapes such as rectangles from
4 lower-level edge primitives.

5 Q. Dr. Majumder, is paragraph 74
6 where you set forth your construction of
7 interrelation of the plurality of edge
8 segments?

9 A. Can you repeat that question,
10 please?

11 Q. Is paragraph 74 that you just
12 referred me to the paragraph where you set
13 forth your construction of storing
14 interrelationships of the plurality of edge
15 segments?

16 A. Uh-huh. Yes.

17 Q. What is the description you
18 provide in paragraph 80?

19 A. It is just explaining how a
20 person of ordinary skill would traverse that
21 mathematical tree in the next step.

22 Q. Okay. So paragraph 80 is not

1 part of your construction of storing
2 interrelationships of plurality of edge
3 segments?

4 A. Paragraph 80 tells how, how that
5 tree will be traversed. It is already -- so
6 if you noted therefore on the intrinsic -- a
7 single connected mathematical tree, that
8 stores the interrelationships of the
9 previously identified plurality and that is
10 then traversed as a unit in the next step.

11 So 75 told you that the tree is
12 created. 80 is telling how would a person
13 of ordinary skill would traverse the tree
14 for the next step. There is no
15 contradiction in these two statements.

16 Q. So does your construction of
17 storing interrelationships of the plurality
18 of edge segments include a construction of a
19 mathematical tree structure?

20 A. That's what the patent says,
21 yes.

22 Q. Okay. And you also addressed

1 the construction of a mathematical tree
2 structure separate in this section about
3 storing interrelationships with the
4 plurality of edge segments; correct?

5 A. Can you point me there?

6 Q. Turn to page 39 of your
7 declaration.

8 A. Yes.

9 Q. Do you see the heading D; A
10 Mathematical Tree Structure is a Single
11 Connected Hierarchical Structure?

12 A. Yes.

13 Q. And is this a different
14 construction than you used above for storing
15 interrelationships of the plurality of edge
16 segments?

17 A. No. It is the same, same
18 structure.

19 Q. And what is your construction of
20 a mathematical tree structure?

21 A. I'll repeat again. A
22 mathematical tree consists of vertices and

1 edges where the edges made relationships,
2 they will have a root, they will be
3 connected without any cycles, and every node
4 will be connected to the root with a unique
5 path, which means every node is connected to
6 another node or every vertex is connected to
7 another vertex with a unique path through
8 the root.

9 Q. That was your definition of a
10 mathematical tree?

11 A. Yes.

12 Q. And is that the definition you
13 provided in your declaration?

14 A. Yes. Where did you point me to?
15 Can you point me to the declaration?

16 Q. Could you turn to paragraph 93
17 of the declaration? It starts at the bottom
18 of page 41.

19 A. Yes.

20 Q. And in that paragraph what do
21 you say a mathematical tree structure would
22 mean to an ordinary person of skill in the

1 art?

2 A. Would mean a single, connected
3 hierarchical structure that stores the
4 interrelationships of the previously
5 identified plurality and is then traversed
6 as a unit by the next stage. Yeah.

7 So there is no contradiction
8 again, because I have mentioned before what
9 is a tree and this is telling that the same
10 structure will be made and then it will be
11 traversed in the next stage.

12 Q. And do you stand by your
13 definition as provided in paragraph 83 or
14 the one you provided today during the
15 deposition?

16 A. They are the same.

17 Q. They required the same thing?

18 A. They are the same thing. What I
19 provided -- Mr. Webb, there is an
20 understanding in computer science on what is
21 a tree. So in 75 I define it. Then in 85 I
22 think I say that it will be used in the next

1 step for traversing. And in 93 I'm
2 repeating again what a POSITA would take the
3 tree to be. There is no contradictions
4 between these statements.

5 Q. In both of these sections you
6 have mentioned that the tree is then
7 traversed as a unit at the next step or by
8 the next stage?

9 A. Uh-huh.

10 Q. Is that required for storing the
11 interrelationships of the plurality of edge
12 segments?

13 A. So storing the
14 interrelationships happens during the
15 creation of the tree. Now you are creating
16 the tree, organizing the information in a
17 certain manner so that you can efficiently
18 access the correct information that you
19 need, right?

20 So it's almost like you have a
21 book and you need page numbers so that you
22 can say, as you are telling me now, oh, go

1 to this page and I will see. Similarly like
2 that, the information has to be organized in
3 a fashion so that it can be accessed and
4 retrieved in an efficient manner, right?

5 If I put alphabet, then I
6 wouldn't be able to retrieve the information
7 in an efficient manner because there is only
8 26 alphabets, so therefore I use numbers.

9 In the tree it is a particular
10 kind of way of storing the information which
11 next you will traverse so that you can
12 extract the correct information that you
13 need, right?

14 So that's the traversing I'm
15 talking about. So creation is a separate
16 step. Then traversal is another process in
17 the pipeline which you would do to get to
18 the information you need, which is kind of
19 filtering based on the properties, whether I
20 can make a detect or whether I can make a
21 plausible object, what is possible from the
22 image formation of the sensor.

1 In that pipeline as you are
2 going to different stages you have to
3 retrieve and access different information
4 and that's the traversal is used.

5 Q. So does storing the
6 interrelationships of the edge segments
7 required traversal?

8 A. Storing does not require this
9 traversal. That is done during the creation
10 of the tree. But then as you go downstream
11 into the pipeline, then you need to start
12 traversing the tree to access the different
13 stored relationships.

14 Q. If a plurality of edge segments
15 are stored in a tree, but the tree is never
16 traversed, would this satisfy your
17 construction of storing interrelationships
18 of the plurality of edge segments?

19 A. It will satisfy the storing of
20 interrelationships, it will not satisfy
21 doing anything with the tree. It's almost
22 like you have a book and you never read it.

1 Q. Okay. So but you said storing
2 doesn't require traversal; correct?

3 A. No. Storing is basically you
4 are creating the tree. You are telling I
5 have a -- this relationship will be -- so I
6 will now go and add two children. So
7 sometimes, sometimes when you are adding
8 information to the tree, for example, I say
9 that a new child is born. I need to add it
10 to the tree.

11 So you may see that okay, from
12 the root, go to this particular person and
13 then add two children to the tree. And at
14 that time you would traverse the tree.

15 So when you are creating the
16 tree, if you create the tree in one chart or
17 even when you are creating the tree when you
18 are going to add a node to it, then you
19 would need to again traverse the tree.

20 Q. And is it your opinion that
21 claim one of the '805 Patents requires
22 traversal of the mathematical tree?

1 A. Yes. Claim one does require
2 traversal when it is going down the pipeline
3 to figure out which are plausible objects,
4 which are objects which could have created
5 the stage.

6 Q. When you say here traverse as a
7 unit, what do you mean by that?

8 A. Traversed as a unit means that
9 the traversal will always be emitted to that
10 tree. So you cannot through a tree have
11 traversal to a node which is not connected
12 to the tree.

13 Q. So when you say traversal, you
14 mean traverse the tree?

15 A. Correct.

16 Q. And where does the '805 Patent
17 describe traversing as a unit?

18 A. Give me a minute. It talks
19 about tree traversal, but it is the same
20 thing, as a unit or not as a unit. The same
21 tree is getting traversed.

22 Q. And where does the '805 limit it

1 to traversing a single tree?

2 A. A tree means a single tree. A
3 tree doesn't mean multiple trees.

4 Q. Does a --

5 A. I, so when I say a person, you
6 don't mean a crowd. You mean one person.
7 That means a tree. That's it.

8 Q. And does a traversal algorithm
9 include a single step or multiple steps?

10 A. There are multiple kinds of tree
11 traversal. Depth first. Depth first, it
12 essentially needs you to go to the different
13 nodes and, so it of course means multiple
14 steps.

15 Q. Does your construction of a
16 mathematical tree structure exclude a
17 forest?

18 A. Not mine. Computer science
19 excludes forest, yes.

20 Q. Okay. And where does the '805
21 Patent discuss forests?

22 A. I don't think '805 discusses

1 forests at all. It's a tree.

2 Q. Okay. And let's turn to -- let
3 me find the right paragraph here -- 93 again
4 of your declaration which starts at the
5 bottom of 41.

6 A. Give me one second.

7 Q. Sure.

8 A. 93. Yes.

9 Q. So the last sentence there, you
10 say: A forest reading is inconsistent with
11 both the patent's pipeline semantics and
12 Sedgewick's definitions; correct?

13 A. Yeah.

14 Q. So your construction here in
15 paragraph 93 that it means a single
16 connected hierarchical structure that stores
17 interrelationships of the previously
18 identified plurality is then traversed as a
19 unit by the next stage excludes forest from
20 being part of that mathematical tree
21 structure; correct?

22 A. Absolutely.

1 Q. Thank you.

2 MR. WEBB: We've been going
3 about an hour and I'm about to switch
4 topics, so do you want to take a ten-minute
5 break?

6 THE WITNESS: That would be
7 wonderful. Thank you so much.

8 MR. WEBB: Let's join back at
9 10:10 Pacific.

10 (Recessed at 12:59 p.m.)

11 (Reconvened at 1:12 p.m.)

12 BY MR. WEBB:

13 Q. Dr. Majumder. Did you speak to
14 anyone during the break?

15 A. No. I just made myself a cup of
16 coffee.

17 Q. Great. Does the '805 Patent
18 provide an explicit definition of a
19 potential destination?

20 A. It actually says that it needs
21 to go to a location where it will stop.
22 That's the definition of a destination.

1 Q. And can you show me where the
2 '805 Patent provides this explicit
3 definition?

4 A. Okay. Let me look at it. So if
5 you see right in the abstract it tells
6 that -- I don't know. The abstract doesn't
7 have column numbers.

8 First of all, it tells that
9 bring the vehicles to a stop at a specific
10 location, for example, in a parking bay or
11 at a loading platform.

12 Q. So you understand this statement
13 in the abstract to be an explicit definition
14 of a potential destination?

15 A. Yes. There is also that and
16 there is also -- wait one minute. There is
17 a specification. I just want to find it.
18 Give me one second. I remember there is a
19 summary, a metric for -- give me one second.
20 Please bear with me. I need to find
21 something here.

22 Yeah. That's it. So thank you.

1 Yes. I consider that to be a definition of
2 destination, to answer your question
3 explicitly, Mr. Webb.

4 Q. Okay. What is your construction
5 of a destination in your declaration?

6 A. My position in my declaration.
7 Let me just go back to it. Give me one
8 second. It should be there in the
9 declaration.

10 It is a fixed, stationary
11 location that can be plausibly interpreted
12 as an endpoint for stopping.

13 Q. Okay. Is that the construction
14 you provide in paragraph 86 of your
15 declaration?

16 A. This was in paragraph 125. But
17 let me see what 86 is providing. It's very
18 hard to memorize this whole thing.

19 86 is telling, yes, it is
20 similar. It says a fixed, physically
21 meaningful endpoint. That's a destination.

22 Q. So is the construction in

1 paragraph 125 or paragraph 86 the correct
2 construction?

3 A. What I say, they both mean the
4 same.

5 Q. Okay. And in paragraph 86 it
6 looks like you are excluding arbitrary and
7 transient objects from a potential
8 destination. Is that correct?

9 A. Absolutely.

10 Q. And what do you mean by
11 arbitrary objects?

12 A. Arbitrary objects is anything
13 what -- like it is not something specific.

14 Q. Where does the '805 Patent
15 discuss arbitrary objects?

16 A. It doesn't discuss arbitrary
17 object. It always talks about specific
18 destinations like docking stations and so
19 on.

20 Q. So the '805 Patent doesn't use
21 the term "arbitrary" to define any objects;
22 correct?

1 A. Uh-huh. Correct.

2 Q. And what do you mean by
3 transient objects?

4 A. Transient means that something
5 which is continuously moving. So in
6 computer vision there is a very specific
7 term when you are trying to identify moving
8 objects which are not in one place and
9 that's called tracking.

10 So transient means something
11 which moves from place to place.

12 Q. And does the '805 Patent use the
13 term "transient" to define any objects?

14 A. No.

15 Q. And how does the '805 Patent
16 identify arbitrary or transient objects?

17 A. It is always talking about
18 stationary fixed object where the vehicle
19 has to go and stop after it identifies it.

20 Q. So are you saying the '805 is
21 not identifying arbitrary or transient
22 objects?

1 A. It identifies a bunch of objects
2 which may be potential destination. Now,
3 whether that will be arbitrary or not is not
4 mentioned, but it can be in the sense that
5 it has certain properties which it's trying
6 to look for and so identify a set of
7 candidate destinations.

8 Of course it does not mention
9 anything about transient objects.

10 Q. And does it identify arbitrary
11 or transient objects to exclude them?

12 A. So it starts with identifying
13 from the image sensor a bunch of objects,
14 which is they never talk about transient
15 objects.

16 Q. Okay.

17 A. It is that it is a fixed
18 destination where the vehicle will find a
19 park, plausible park and then will be able
20 to go and stop.

21 Q. Okay. Does your construction of
22 a potential destination exclude a moving

1 vehicle from being a potential destination?

2 A. Yes.

3 Q. Does your construction exclude a
4 stationary vehicle from being a potential
5 destination?

6 A. If the vehicle doesn't move, it
7 can be a potential destination. But the
8 patent specifically talks about immovable
9 structures, like docking stations, you know,
10 like where the vehicle will go and stop to
11 make, I don't know, unloading things or
12 whatever it is.

13 Q. So a stationary vehicle could be
14 a potential destination; correct?

15 A. Potential candidate destination.
16 But then, of course, as you know, in the
17 patent it also tries to match what will
18 become a plausible destination in the next
19 step, which will match whatever they are
20 looking for, yes.

21 Q. Are you saying a stopped vehicle
22 could be a potential destination but not a

1 plausible destination?

2 A. Stopped vehicle, if it is always
3 stopping, it is not moving, then it can be a
4 destination.

5 Q. Okay. Both a potential
6 destination and a plausible destination?

7 A. Yes.

8 Q. And under your construction,
9 what makes an endpoint physically
10 meaningful?

11 A. Physically meaningful is based
12 on the definition of your destination.

13 So, for example, if you are a
14 car vehicle, maybe you have a certain kind
15 of doors or building that you are looking
16 for. If you are a different kind of
17 vehicle, you may look for a different kind.
18 It's meaningful in the context of what the
19 vehicle is, the function the vehicle is
20 trying to achieve.

21 Q. So whether something is
22 physically meaningful depends on the

1 intended function?

2 A. Yeah. That's what I interpret
3 from the patent.

4 Q. And in your construction what do
5 you mean by endpoint?

6 A. Endpoint means where the vehicle
7 will go and stop.

8 Q. So does that exclude
9 intermediate destinations?

10 A. There is no mention of
11 intermediate destinations in the patent.

12 Q. So is your construction since it
13 doesn't mention it, it cannot include it?

14 A. What do you mean by intermediate
15 destination? What is your definition?

16 Q. Sure. To use your example of a
17 truck going to a docking station at a cargo
18 bay and let's say it's a half mile from the
19 docking station, some position between
20 there, a quarter mile from the docking
21 station.

22 A. But the patent talks about how

1 do you start from an image picture and
2 identifies the destination where you want to
3 go, and then make your way to that
4 particular destination. So for that
5 computation there is no definition of
6 intermediate destination.

7 Q. So for the, so for the example
8 where -- let's talk about the same docking
9 station. I am pulling up to a cargo bay,
10 there is three different docking stations,
11 it chooses one and the vehicle moves to that
12 docking station. Is there only an endpoint,
13 there is no intermediate destinations
14 between the starting point and the endpoint?

15 A. There is no intermediate
16 destination, because from the image sensor,
17 based on all the steps that you have
18 performed in your pipeline, including the
19 final exclusion step, right, where you kind
20 of -- you have a proximity test also which
21 tells you you will go to the closest docking
22 station. Therefore, you will go to that one

1 docking station.

2 So there is no intermediate
3 destination. If you perform the whole
4 pipeline, you will end up with one
5 destination.

6 Q. What about in column seven of
7 the '805 Patent starting on line one, that
8 whole paragraph it talks about selecting a
9 new destination?

10 A. Give me one second. Can you
11 please explain one more time where you are
12 looking?

13 Q. The '805 Patent, this is column
14 seven, the top of the column, starting at
15 line one.

16 A. Column seven. Give me one
17 second. Column seven, yeah.

18 Q. It talks about continuously
19 monitoring the potential destination and
20 potentially selecting a new destination; is
21 that correct?

22 A. Let me just -- give me two

1 seconds to read that. I have not memorized
2 this. So, yes. So let me tell you what
3 this is telling. Let me explain.

4 So suppose you have taken the
5 image, right, and you are doing this
6 processing to figure out what will be my
7 final destination, right? And through all
8 the process you have finally come to one
9 destination and then you see that in the
10 last phase when you are trying to figure out
11 the path, right, you are trying to go to
12 that destination through the path, and you
13 say that, oh, from the position I am in I
14 really cannot go to that destination.
15 Right?

16 And that is what it is talking
17 about, that in that time you can say that
18 well, my destination is now another thing,
19 right? Maybe I will go to the second
20 proximate destination.

21 So again for the one pipeline
22 that you are doing, you are starting from

1 the center input going to a destination.
2 Now, if after that you feel that your
3 vehicle is not, your path is not able to be
4 computed, then you may have to change your
5 destination.

6 But this is not during this
7 pipeline. Because again you will change the
8 destination and you will go through this
9 pipeline again, the whole pipeline, right?
10 So it's for the sake of the pipeline it is
11 fixed.

12 Q. Let me make sure I understood
13 your explanation. It sounded like I
14 initially pick a destination based on the
15 pipeline, and then if some circumstance
16 arises and I can't make it to that
17 destination, I do a new pipeline and select
18 a new destination. Is that correct?

19 A. Correct.

20 Q. And you consider those to be two
21 different guidance attempts?

22 A. Yes.

1 Q. And so what is the endpoint of
2 the first guidance attempt?

3 A. The endpoint of the first
4 guidance attempt is the first destination
5 and the second point is the second.

6 Q. But in the first one you never
7 get there; correct? You never get to the
8 first destination in your example?

9 A. So the whole patent is about
10 computing the path. Right? Whether you get
11 there or not is not what we are discussing
12 here. That's something separate. Right?

13 So you were not able to compute
14 the path to that destination, right? There
15 was for some reason it failed. So now you
16 will go and get to the next destination.

17 Q. So choosing a second destination
18 is based on not being able to calculate the
19 path? Is that correct?

20 A. So it tells that due to
21 circumstances, a potential destination is
22 selected as a new most proximate destination

1 is best reached in consideration of the
2 steering properties and capabilities.

3 So in this particular
4 specification what it is really telling,
5 that if my vehicle is in a position where
6 the destination cannot be reached, then I
7 have to move to the next destination which
8 is the most plausible next destination.
9 That's it.

10 Q. And but that's mapping during
11 the first pipeline calculation?

12 A. No. No. The first pipeline is
13 completed. Then you are saying hey, my
14 pipeline did not get me to anywhere, so I
15 need to now provide an input, another
16 destination and then the whole pipeline will
17 repeat.

18 Q. How does the, how does it know
19 that the first pipeline destination is not
20 getting the vehicle to the intended
21 destination?

22 A. Because it couldn't find a park.

1 So remember in this case the most important
2 thing is you are going to detect the
3 destination. Either you may not find the
4 destination, that is one thing, right?

5 When all the different pipeline
6 steps are done and you find after your
7 acceptance analysis that I really don't have
8 a destination here, right? So they will say
9 there is no destination so that means I
10 don't need to stop anywhere.

11 Second thing, it can be that
12 there is probably -- I have a destination
13 and I am not able to find a path given the
14 situation of my vehicle. Right? So
15 probably my vehicle has to ram through a
16 pole and go or my vehicle is completely
17 opposite direction to this, and then you say
18 okay, that means my -- if there is something
19 else where I can give a new destination, so
20 that new destination is given.

21 Now the whole pipeline can go
22 again and say oh, yeah, I see another

1 destination. In this case there is a
2 possible path and you can go and stop there.

3 Q. And so under that approach, if
4 the first pipeline is able to calculate a
5 path, then there is never a need to select a
6 new path; correct?

7 A. Yes.

8 Q. Okay. Beyond a potential
9 destination. Claim one also requires a most
10 proximate destination; correct?

11 A. Correct.

12 Q. What is the plane and ordinary
13 meaning of a most proximate destination?

14 A. Closest destination.

15 Q. Closest to the vehicle?

16 A. So okay. Most proximate is
17 dependent on the metric you are using for
18 defining closeness, right? So you can say
19 that it is the closest vehicle based on the
20 distance from the vehicle. You can say it
21 is the closest vehicle based on the distance
22 from the back of the vehicle, distance of

1 the front of the vehicle, closest angle to
2 the vehicle.

3 So there should be a metric by
4 which you tell what is proximate. Right?
5 And the metric most of the time would
6 probably mean closest to the vehicle, but
7 doesn't need to be that, especially when the
8 steering conditions of the vehicle has to be
9 taken into consideration.

10 So, for example, if something is
11 right in front of me, like two meters in
12 front of me, right, and something is just
13 six inches behind me in terms of steering
14 capability, though the six inches is smaller
15 distance, it is probably not the most
16 proximate, right? So that depends upon what
17 is the metric you are defining for
18 proximate.

19 Q. And what metric does the '805
20 Patent provide for determining the most
21 proximate destination?

22 A. I think it leaves it up -- most

1 likely it leaves it up to people to provide
2 a metric. Most proximate, new most
3 proximate, most proximate. It doesn't
4 provide anything. It just, it just, that
5 means that a POSITA will define what is that
6 metric and they will figure out most
7 proximate based on that. So the algorithm
8 there will be a metric which will define
9 most proximate.

10 Q. Can the most proximate
11 destination change over time?

12 A. I mean if the metric remains the
13 same, it can change if the vehicle -- over
14 time it will not change because the
15 destination is fixed. Right? So if the
16 vehicle is moving, right, it will either get
17 closer to the most proximate or, but because
18 you are doing the pipeline, right, you will
19 know what is the -- any time you know what
20 the proximate destination is and it will
21 make it there. So in terms of changing a
22 destination, it should not change.

1 Q. In the situation where I do
2 change a destination, would the most
3 proximate destination change?

4 A. Why would you change a
5 destination? Because I have computed this
6 to be the most proximate. I have got a path
7 to go there. Unless I don't have a path, I
8 don't have any need to change the
9 destination.

10 Q. Does the '805 define the
11 algorithm for determining most proximate?

12 A. Yes. It has a complete pipeline
13 that it defines.

14 Q. And what is that algorithm for
15 determining the most proximate location?

16 A. So just the most proximate or
17 the whole pipeline?

18 Q. I'm just asking about an
19 algorithm for the most proximate?

20 A. As I told, it will depend upon
21 the metric, right, and the data that you
22 have.

1 So, for example, like in a one
2 example is if it is a distance, then there
3 should be some way to estimate the 3D
4 distance of the object and then say that is
5 most proximate. If it is the angle, then
6 you have to have a metric to say find the
7 angle of distance from the object.

8 If you are considering the back
9 or front of the object, then you have to
10 have a metric which knows the vehicle
11 dimensions and decides which is most
12 proximate. So all depends upon the metric.
13 That's why the proximate is basically based
14 on a metric.

15 Q. And as you mentioned earlier,
16 the '805 Patent doesn't provide any of those
17 metrics; correct?

18 A. Not really.

19 Q. Okay. And is the most proximate
20 location always one of the potential
21 destinations?

22 A. No. Because in the pipeline the

1 most proximate comes at the end. So you are
2 first checking with the shapes of the shapes
3 of the destination, then you are checking
4 with the image sensor whether that
5 particular geometric shape creates a shape
6 on the image based on the sensor properties;
7 then you are checking that what is the
8 closest of those. So it is elastic.

9 So a most proximate object may
10 not be a destination. The property of
11 destination comes first. Then the
12 proximate.

13 Q. So you have potential
14 destinations, plausible objects and a most
15 proximate destination; correct? And what
16 I'm asking is is the most proximate
17 destination always one of the potential
18 destinations that was identified as
19 plausible and then selected as the most
20 proximate?

21 A. Yes. So it is all a set of
22 filtering processes. So it starts with the

1 large subset and every time in the pipeline
2 it becomes a smaller subset.

3 Q. So because of that, since we
4 know potential destination needs to be the
5 final endpoint destination, does that also
6 mean that the most proximate destination
7 needs to be a final endpoint destination?

8 A. Please repeat the question.

9 Q. Sure. In your construction you
10 said a potential destination needs to be a
11 physically meaningful endpoint?

12 A. Uh-huh.

13 Q. And then I believe you also just
14 said that the most proximate destination,
15 because of the filtering, necessarily is one
16 of those potential destinations; correct?

17 A. Yes.

18 Q. And so I'm just confirming with
19 you that then the most proximate destination
20 also needs to be a physically meaningful
21 endpoint?

22 A. Most proximate destination, yes,

1 it should be, because you are looking for
2 the physically plausible endpoints.

3 Q. So then it also needs to be
4 fixed like the potential destination;
5 correct?

6 A. Correct.

7 Q. Okay. Once a potential
8 destination has been selected and we have a
9 most proximate destination we are going to,
10 does the path get updated or the vehicle
11 goes on that single path?

12 A. So as per the patent, you are
13 computing an optimized path. So what that
14 means is there may be multiple ways to get
15 to that destination, but you are going to
16 choose one, again in this case of the patent
17 they talk about the vehicle property, what
18 will be the easiest, quote/unquote, to get
19 with the vehicle, right?

20 So that is an optimized path.
21 Maybe I did not exactly answer your
22 question. If you can repeat the question

1 one more time?

2 Q. Sure. So as you explained, it
3 selects an optimized path based on the
4 vehicle properties and we are heading to
5 that destination that's been selected. Once
6 you've selected that path, does that path
7 change or is it fixed?

8 A. It should be fixed until the
9 destination changes, because it has been
10 selected as the optimized best possible path
11 to reach the destination.

12 Q. Okay. So it doesn't readapt the
13 trajectory of the vehicle along the way?

14 A. No.

15 Q. Okay. So the '805 doesn't
16 support that, it requires once you have
17 selected a path, you go on that optimized
18 path; correct?

19 A. Correct. I mean, again I would
20 mention the '805 Patent talks only about the
21 computation, right? And we hope that how
22 that output of that computation is being

1 used is to follow that path to go to the
2 destination. That's the intent.

3 But '805 does not specifically
4 say what does the vehicle do with that path.
5 But that of course should be the intent,
6 right. But the intent put to the method is
7 a possible destination we are looking for
8 which is fixed and the output is the
9 optimized path.

10 Q. So the '805 doesn't discuss the
11 use of the optimized path, it just says we
12 calculate this and then it stops?

13 A. Yeah. In the claim it says the
14 intent is the vehicle will come to that path
15 and stop.

16 Q. And the claim doesn't require
17 actually doing anything with the vehicle;
18 correct?

19 A. Does not require, but that's
20 about, yeah, correct.

21 Q. Does the '805 Patent provide an
22 explicit definition of performing an

1 additional acceptance analysis?

2 A. Yes.

3 Q. And where does it do that?

4 A. Okay. Give me a minute. Many
5 places from claim one. So if you see in
6 column -- give me one second. Column 8,
7 number 15, you will see "performing an
8 additional acceptance analysis so as to
9 identify at least one accepted object." And
10 then all the dependent claims, for example,
11 you have it in claim five, you also have it
12 in claim 13. So they all talk about
13 acceptance analysis.

14 Q. So you are saying those uses of
15 additional acceptance analysis in claim one
16 and the dependent claims are what provide
17 the definition of performing an additional
18 analysis?

19 A. And of course there is also in
20 the specification, right? So there is --
21 actually, in the specification you will see
22 in column five, in column six. If you just

1 do an additional acceptance analysis, you
2 will see they are talking about an IPC, best
3 method and so on.

4 Q. And you are viewing those
5 examples that are in the specification as
6 explicit definitions of performing an
7 additional acceptance analysis?

8 A. Some examples of how you can do
9 an acceptance analysis. The specification
10 has to be some best practices you can use.

11 Q. You are taking those to provide
12 a definition of performing additional
13 acceptance analysis?

14 A. It's not a definition. It is
15 not one specific definition, but it is some
16 examples of what can be used for acceptance
17 analysis. But there is a step of acceptance
18 analysis. It will provide one best practice
19 method to do the acceptance analysis.

20 Q. So they provide examples, but
21 the '805 Patent doesn't provide an explicit
22 definition of performing an additional

1 acceptance analysis; correct?

2 A. Let me see the claim. So it
3 tells additional acceptance analysis in the
4 claim, same claim, including analyzing a
5 shape of the image formation of each object
6 in the image data based on knowledge of at
7 least one imaging property of the imaging
8 sensor relative to the surrounding field.
9 That is their definition.

10 Now, how could you analyze the
11 shape is what they give one method in the
12 specification. They are trying to analyze
13 the shape in that acceptance analysis.

14 Q. Okay. So in column 8, this is
15 claim one, line 15, it says "performing an
16 additional acceptance analysis so as to
17 identify at least one accepted object", and
18 you said the next part is really what
19 provides the definition?

20 A. Yeah. You need to analyze a
21 shape of the image formation of each object,
22 an image.

1 Q. So, Dr. Majumder, the second
2 part of this where it says, "the additional
3 acceptance analysis including analyzing a
4 shape of the image formation of each object
5 in the image data based on knowledge of at
6 least one imaging property of the imaging
7 sensor relative to the surrounding field",
8 is the definition, the explicit definition
9 the '805 Patent provides for an additional
10 acceptance analysis in your view; correct?

11 A. Correct.

12 Q. And in your declaration what is
13 the construction of performing an additional
14 acceptance analysis that you provide?

15 A. Okay. Give me one minute. I
16 have to find where I -- can you tell me the
17 number where I talk about acceptance
18 analysis?

19 Q. I think it might be useful to
20 look at paragraph 71 of your declaration.

21 A. Okay. That helps. Thank you,
22 Mr. Webb.

1 Okay. 71. So "performing an
2 additional acceptance analysis to mean a
3 separate, subsequent analysis step that
4 operates only on the set of objects
5 previously found plausible by the matching
6 algorithm and evaluates those objects
7 against image-formation constraints
8 determined by the imaging sensor's
9 properties relative to the scene; only
10 objects that pass this analysis are
11 designated accepted objects and stored for
12 trajectory computation."

13 Q. Is that the same definition that
14 you said the '805 Patent provides?

15 A. Yes. It tells that you are
16 trying to match the shape of the object
17 against what would be provided by the image
18 sensor, so it is the same thing.

19 Q. Okay. So there is no difference
20 there; correct?

21 A. No.

22 Q. And when you say performing

1 additional acceptance analysis must be a
2 separate analysis step, what must it be
3 separate from?

4 A. Separate means you are going to
5 have a set of plausible objects, so it is
6 not going to happen on the first step where
7 you have already identified some object.

8 So you are first doing some edge
9 analysis, doing the hierarchical tree
10 traversal to figure out geometry, which
11 objects will match the destination that
12 becomes your plausible object, and this step
13 is an additional step where you are doing
14 the image-sensor-based computations to tell
15 that this is an object which can be a
16 destination.

17 Q. So you are saying it needs to be
18 separate from the earlier analysis, the
19 image analysis steps?

20 A. Yes.

21 Q. And can the additional
22 acceptance analysis be part of a multi-step

1 analysis process?

2 A. It can be part of the multi-step
3 analysis process, yes. But they are
4 distinct input and output. Because this is
5 a pipeline. The definition of a pipeline is
6 the output of one step goes as input to the
7 next step. That is again a computer science
8 construct. So it should be an output of the
9 first step going to the input of the next
10 step.

11 Q. Does the '805 use the term
12 pipeline?

13 A. I will have to check. But it
14 gives everything in the form of pipeline,
15 because when you, when you look at -- it
16 doesn't use the term "pipeline", but when
17 you see this whole thing from column 8 from
18 the beginning to 20, like 25, right; if you
19 see that structure, you will see that the
20 output of every step becomes the input of
21 the next step.

22 So this gives you one, two,

1 three, four steps, right, that is going to
2 happen. And that's exactly what is a
3 pipeline. Because you have output of one
4 step going, so I defined it as a pipeline.

5 Q. Okay. And along the lines of
6 the pipeline, when you say performing an
7 additional acceptance analysis must be a
8 subsequent analysis step, what must it be
9 subsequent to?

10 A. Subsequent to the previous step,
11 which is analyzing one or more potentially
12 geometric objects for plausibility using
13 matching algorithms.

14 Q. Your construction limits the
15 additional acceptance analysis to operating
16 only on the plausible objects identified by
17 that matching algorithm in 1.4.2; correct?

18 A. Yes.

19 Q. And does limitation 1.4.3, which
20 is the additional step, does run to one or
21 more plausible objects from 1.4.2?

22 A. It does additional, right. That

1 automatically refers to the previous one.

2 Q. But it doesn't explicitly refer
3 to one or more plausible objects; correct?

4 A. Doesn't explicitly, but anybody
5 reading this would see that it's basically
6 talking about that. It is giving you
7 including the steps.

8 So when you see it talks
9 "wherein the extracting includes" at the
10 beginning of column 8, and then it gives
11 step by step what is happening. So it, of
12 course it talks about the plausible objects.

13 Q. So as you said, all of those
14 steps for edge detection there is detecting
15 potential destinations, the identifying
16 plausible objects and the additional
17 acceptance analysis, they are all part of
18 the same multi-step analysis from the
19 extracting; correct?

20 A. Multi-step analysis for
21 identifying the best destination, yes.

22 Q. Okay.

1 A. Can I take a short break, just a
2 bio break?

3 MR. WEBB: Sure.

4 (Recessed at 1:52 p.m.)

5 (Reconvened at 1:54 p.m.)

6 BY MR. WEBB:

7 Q. Dr. Majumder, did you speak to
8 anyone during the break?

9 A. No.

10 Q. Great. So we were talking about
11 additional acceptance analysis in limitation
12 1.4.3 and if that limitation does not
13 explicitly refer to one or more plausible
14 objects, but cites each object in the image
15 data, what conveys to a person of ordinary
16 skill? The part that the additional
17 acceptance analysis is performed on only one
18 or more plausible objects?

19 A. I think additional acceptance
20 only talks about the ones which have already
21 been accepted as plausible objects.
22 Otherwise, there would not be the term

1 "additional". Because all of these are kind
2 of going through the process and you can see
3 that the whole purpose of this pipeline is
4 to elimination.

5 You can start with 10 objects
6 which are matching the destination, and as
7 you are going down the pipeline, you are
8 sieving. So if my way is to compute the
9 most efficient way of doing this, then why
10 would I go back to something which I've
11 already excluded in the previous pipeline,
12 higher up in the pipeline?

13 So the "additional" basically
14 tells that whatever I have got now, which is
15 the set of candidate destinations, now I
16 have to perform some additional analysis to
17 see if something else can be sieved out.

18 So that "additional" kind of
19 very clearly states that I'm not going to go
20 back to the beginning where I had ten
21 objects because that's completely -- I have
22 already got other parameters which I have

1 rejected those objects. So whatever has
2 come to be a plausible object, I'm now
3 trying to see even for the restricted based
4 on other things so that I can come to one
5 object, right?

6 So that "additional" term tells
7 that it cannot be going back to the original
8 list I'm doing.

9 Q. Okay. Could it be going back to
10 the one or more potential geometric objects
11 for additional acceptance analysis?

12 A. Because you have already
13 rejected some of them, why would you go back
14 to that step? It is almost like telling
15 when you are trying to figure out a person
16 you are going to cast in your -- you are
17 looking for somebody, for example, you are
18 looking for somebody who is brown, looking
19 for somebody who is going to be tall,
20 somebody who is going to be plump. So if
21 you have already identified the set of brown
22 people, why would you go back again to the

1 biggest list of people who were not brown?

2 If you already identified
3 somebody who is plump, why would you go back
4 to a list where people brown, plump and thin
5 were included? You would take now this list
6 and say what are my additional criteria.

7 Oh. I need somebody who looks confident for
8 this role. So which of these people look
9 confident?

10 So why would you go back to any
11 other step, because the whole existence of
12 the step is to throw out certain candidates
13 because they didn't meet some of your
14 criteria. So choosing is to have a
15 destination which meets all of your criteria
16 and in each pipeline you are throwing out
17 certain objects, this is gone, this didn't
18 meet this criteria, this is gone. So you
19 come to the most restrictive state which
20 meets your criteria and now why would you go
21 back to any other step? That doesn't make
22 sense.

1 Q. And so what of the claim
2 language here tells us that each object in
3 the image data should be limited to the one
4 or more potential geometric objects that are
5 identified as plausible objects?

6 A. It tells the additional
7 acceptance. I'm telling you additional --
8 first is potential geometric objects, then
9 analyzing one or more potential geometric
10 objects to find plausible object, then
11 performing additional acceptance analysis is
12 almost imperative that has to be the
13 plausible object because why would I go back
14 to the previous one? The "additional" word
15 is very important in the interpretation of
16 this.

17 Q. How many analysis steps are
18 required by the claim before the additional
19 acceptance analysis?

20 A. So first is the prestructure,
21 then it is, next is two, the geometric
22 object; three, the plausible object, and

1 next is four, which is the third one which
2 is additional analysis. So there are like
3 four different steps.

4 Q. So you are saying three of them
5 have to happen before the additional
6 acceptance analysis; correct?

7 A. Correct.

8 Q. Those three are the edge
9 detection and edge segmentation, then the
10 analyzing the plurality of edge segments for
11 presence of a geometric object associated
12 with a geometrical form that may at least
13 describe a potential destination, and then
14 the third is analyzing the one or more
15 potential geometric objects for
16 plausibility?

17 A. Right.

18 Q. So all three of those need to
19 happen before the performing an additional
20 acceptance analysis; is that correct?

21 A. Correct.

22 Q. And what tells you that all

1 three of those need to happen before the
2 additional acceptance analysis?

3 A. Because it tells extracting
4 includes all these steps and the
5 specification also gives you all those
6 steps.

7 Q. So you are treating this as an
8 ordered list that these steps need to be
9 performed in this exact order; correct?

10 A. I am -- the order is encoded in
11 it because as I told you, the output of
12 every step, if you notice in the language,
13 right, storing interrelationships of
14 plurality of edge segments in a mathematical
15 tree structure and then that is the output
16 of the first step.

17 And it tells analyzing the
18 plurality of edge segments for the presence
19 of a geometric object, which means that I
20 have taken the output of the first step and
21 now doing the geometric object on top of it.

22 Then it -- and the output of

1 this is identify one or more potential
2 geometric objects.

3 The next step says analyzing the
4 one or more potential geometric objects,
5 which means whatever I have just identified,
6 for plausibility using a matching algorithm
7 so as to identify one or more plausible
8 objects.

9 So the way the language is
10 written, right, if I were the person trying
11 to implement this metric method, it will
12 automatically tell me that output from one
13 is going to the input of the next step.

14 Because if I just change the
15 order of those steps, it will not make
16 sense, right? If I just, for example, put
17 the second step first, there is no
18 restructure to delete the geometric objects.
19 So how can I do that step?

20 So this arrangement and the
21 steps automatically tells us the output of
22 one goes to the input of another and we have

1 to do it in this order.

2 Q. Thank you. I have a question
3 about that. So I agree with you that the
4 analyzing the plurality of edge segments, as
5 you said, refers to the plurality of edge
6 segments that were identified in that
7 previous step, and then the next analyzing
8 step says analyzing the one or more
9 potential geometric objects; taking output
10 from the previous analysis step and
11 explicitly referring to it there in the
12 analyzing the one or more potential
13 geometric objects to identify one or more
14 plausible objects.

15 However, when I get to the
16 additional acceptance analysis step, there
17 is no mention of the one or more plausible
18 objects?

19 A. Then why -- sorry. Go ahead. I
20 shouldn't have talked over you.

21 Q. So we know from the previous
22 examples that the inventor knew how to refer

1 to the outputs from the previous steps, but
2 chose not to in the additional acceptance
3 analysis step. What do you think the reason
4 for that is?

5 A. The "additional", that's the
6 word. It's just like a different way of
7 referring to it. Again, I'm telling that
8 why would -- when you have gotten rid of
9 certain objects because they didn't meet
10 your geometric object criteria or the
11 plausibility criteria, it doesn't make any
12 sense to go back to the set of objects which
13 didn't meet some of my criteria and do some
14 computation on that, because my additional,
15 what is it called, sorry, additional
16 acceptance steps may pass, but already
17 previous steps have not passed it.

18 So in the context of this,
19 doesn't make any sense. Why would I go
20 back? I have already rejected certain
21 things. It's like, as I told you, I have
22 five criteria and I have already rejected

1 based on the earlier criteria; why would I
2 go back to that earlier set of objects? It
3 doesn't make any sense. That is my opinion.

4 If I wish to do that, I will do
5 that. It would be foolish to go back to the
6 original set of objects, right?

7 Q. So it sounds like your
8 explanation is based on a logical approach,
9 but not based on any specific claim language
10 that's included here to limit it to the one
11 or more plausible objects?

12 A. Additional.

13 Q. So additional means one or more
14 plausible objects --

15 A. Yes.

16 Q. -- in this context?

17 A. No. Additional means that one
18 more set of criteria I have to test on. So
19 every step of this pipeline is testing again
20 certain criteria. Geometric object is
21 testing whether the shape in the image is
22 similar to what I expect in the expected

1 object shape to be. Plausible object is
2 checking, oh, if the actual object was this
3 3D shape based on the sensor parameters,
4 does the image conform to that. Right?

5 Now the additional acceptance is
6 telling you another additional criteria I
7 have to test for. Right? So that's the
8 additional acceptance.

9 Q. If the claim also recited
10 performing another analysis step to identify
11 from the one or more plausible objects
12 highly plausible objects, then would the
13 additional acceptance analysis then be
14 limited to the highly plausible objects?

15 A. There is no highly plausible in
16 the patent. Right? So let us go by the
17 patent terms. Right?

18 So if it mentioned plausible, it
19 is imperative, it would be good. But I
20 think it's very clear that these each step
21 is going for a particular metric which you
22 are going to check.

1 It's a matching, Mr. Webb. At
2 the end of the day you are trying to match
3 from image whether this image is -- really,
4 see the intent of the whole metric is to
5 match whatever I'm seeing in the image, is
6 it actually the destination I should go for.

7 And, of course, in this intent
8 there has to be some accuracy. If I'm going
9 and ultimately choosing arbitrary
10 destination, then this method is not a good
11 right one.

12 So the intent tells you that
13 each step I am kind of taking a bunch of
14 objects, applying a criteria, seeing whether
15 it matches and then throwing it away some of
16 which didn't match. Go to the next step.
17 Now I have a second criteria. Let me see
18 which one of these match the second
19 criteria. Throw something out. Go to the
20 third. See what is if you have more
21 criteria.

22 So if you are going through this

1 pipeline like a sieve, filtering so you get
2 to the right answer, that additional tells
3 you everything, that it really doesn't make
4 any sense to go back to the original set of
5 objects you have identified. Because some
6 of them are already not conforming to some
7 of the criteria, all of which should match
8 for your designation.

9 Q. Does the '805 Patent in claim
10 one, does it allow additional analysis for
11 filtering between the step of identifying
12 the one or more plausible objects and
13 performing the additional acceptance
14 analysis?

15 A. Yes. It will be filtered.
16 Because when you perform the additional
17 acceptance analysis, some objects will go
18 away.

19 Q. Let me ask the question again.
20 I'm saying before you performed the
21 additional acceptance analysis but after
22 you've identified the one or more plausible

1 objects, does the '805 Patent allow an
2 intermediate filtering of the plausible
3 objects before you perform the additional
4 acceptance analysis?

5 A. I would imagine. You know, it
6 depends on what -- one thing you should
7 understand in this patent, the additional
8 analysis, they have kept it, they have given
9 a minimal requirement for that, right?
10 Because they tell at least one property and
11 so on.

12 But the additional analysis in
13 my opinion as a POSITA is that if you want
14 to roll in a few other parameters which may
15 be specific to the intent you have, maybe I
16 am doing this for cargo, or delivery for a
17 person, whatever. That can be rolled into
18 that acceptance analysis. Right?

19 So that's why other steps are
20 very specific, if you notice, right? So
21 they have like, I have very specific, I do
22 the geometric things very specific, I do the

1 image-sensor-based computation which are
2 very specific. So this step is also very
3 specific that from here you are separating
4 out other, throwing out more objects, right?

5 So in between that if you are
6 putting some step, I would say that it is
7 part of the acceptance analysis, right?

8 Q. So you are saying there cannot
9 be any other steps between analyzing to
10 identify one or more plausible objects and
11 performing an additional acceptance
12 analysis?

13 A. No. As per the patent there
14 shouldn't.

15 Q. Okay. Let's turn to paragraph
16 113 of your declaration on page 49 of your
17 declaration.

18 A. Give me a minute. 113. Okay.
19 Yes.

20 Q. Just go ahead and review this
21 paragraph and let me know once you have done
22 that.

1 A. Yes.

2 Q. In the last sentence of
3 paragraph 113 it states that the same
4 top-of-box heuristic is asked to do double
5 duty as both the identification step and the
6 acceptance step.

7 A. Uh-huh.

8 Q. What do you mean by that?

9 A. So if you notice that there are
10 kind of four steps which are identifying
11 different things. Like first one is
12 identifying a geometric object. The next
13 one is identifying shape which is consistent
14 with image formation. And then the
15 acceptance analysis is a separate step.
16 Right?

17 So all of them have been
18 compressed into one. There is in Broggi,
19 there is only the detection of bottom
20 corners and then there is an idea of the
21 search for the target. So as you see, the
22 target will be done.

1 So they kind of identify a box
2 where I'm going to search for the target
3 that I am tracking. It is not stationary,
4 it is continuously moving. And then I will
5 have some kind of, you know, property
6 distance refinement to say yes, this is the
7 correct target.

8 So all these steps have been
9 compressed. There is no pipeline where I am
10 sieving through different things and
11 rejecting.

12 Initially I just identify the
13 box that I have to look for and then the
14 acceptance analysis. These are compressed
15 into one step.

16 Q. Does Broggi identify the bottom
17 corners of the box separate from the top of
18 the box?

19 A. So it first identifies the
20 bottom corners and then it searches for the
21 top of the box in a constrained region which
22 makes sense based on the perspective and

1 size constraints.

2 Q. Turning back to paragraph 113 of
3 your declaration, is it your position that
4 the petition improperly relies on Broggi's
5 top-of-box detection for elements 1.4.1 and
6 1.4.3?

7 A. Can you tell me where was 1.4.1?
8 Because in the claim it is not 4.1 but in
9 the declaration. So where in the
10 declaration -- let me see. Give me one
11 second.

12 Q. If you turn to page 16 of your
13 declaration.

14 A. Thank you so much, Mr. Webb.
15 16. Okay. 1.4: Analyzing the plurality of
16 edge segments. Which one did you say?

17 Q. Performing an additional
18 acceptance analysis.

19 A. Can you tell me your question
20 one more time?

21 Q. Is it your position that the
22 petition improperly relies on Broggi's

1 top-of-box detection for both 1.4.1 and
2 1.4.3?

3 A. Yes.

4 MR. WEBB: We've been going a
5 little over an hour, so let's go ahead and
6 take another 10-minute break.

7 (Recessed at 2:15 p.m.)

8 (Reconvened at 2:25 p.m.)

9 MR. WEBB: Dr. Majumder, I would
10 like to thank you for your time today. I
11 have no more questions. I will pass the
12 witness to Brandon.

13 BY MR. THEISS:

14 Q. Great. I'm going to have a
15 couple brief questions. Do you want to take
16 a moment or jump in?

17 A. I'm good.

18 Q. Professor, can you look at
19 Figure 1 of the '805 Patent?

20 A. '805. Yeah.

21 Q. Yep.

22 A. Give me one second.

1 Q. It's page 3 as labeled.

2 A. Yeah. It does say one of three
3 on top?

4 Q. Yes.

5 A. Yeah.

6 Q. What is Figure 1 depicting?

7 A. They are depicting the pipeline.

8 Q. Okay. Let's look at some of the
9 steps in that pipeline. Do you know what
10 reference numeral 12 represents?

11 A. Reference number 12. Can you
12 point me where it is?

13 Q. I think -- again I think the
14 discussion of reference numeral 12 appears
15 at the bottom of column two, going on to the
16 top of column three.

17 A. Referencing to -- oh, yeah.
18 Exactly. That's where I'm finding it, yes.

19 Q. Okay. Can you tell me what
20 reference numeral 2 corresponds to?

21 A. 12?

22 Q. Yes.

1 A. Yeah. It corresponds to --

2 Q. You can read it directly from
3 the patent if that's more helpful.

4 A. "Image-processing unit includes
5 an edge detector and segmenter which
6 extracts the relative positional parameters
7 of at least one potential destination from
8 the image data."

9 "Connected downstream of the
10 edge detector and segmenter is a unit for
11 locating objects in the image data that have
12 geometric shapes that typically correspond
13 at least partially to the potential
14 destination."

15 Q. Okay. Let me stop you there.
16 Can you explain as a person of ordinary
17 skill in the art what that passage means
18 that you just read?

19 A. So it means that connected
20 downstream of the edge detector and
21 segmenter is a unit. Downstream means it is
22 also expressed in the picture, right, that

1 it is taking its input from 11, number one,
2 right, for locating object's geometric data.

3 So it will locate in the image
4 data whose shapes are typically similar or
5 at least partially similar to the potential
6 destination.

7 So, for example, if I'm looking
8 for a rectangular destination, I would look
9 for objects with rectangular shape or at
10 least square shape or partially rectangle
11 shape, but anything that doesn't have
12 corners, like a circle, would be rejected.

13 Q. Can you explain what reference
14 numeral 13 corresponds to?

15 A. So "in addition, the
16 image-processing unit includes a comparator
17 unit for analyzing the detected geometric
18 objects which correspond to the typical
19 geometric form, to check for plausibility
20 using a matching algorithm for making a
21 comparison with object patterns stored in a
22 memory unit."

1 Q. Okay. Same question. Can you
2 explain as a person of ordinary skill in the
3 art what that passage teaches you?

4 A. So the detected geometric unit
5 which meet the criteria of typical geometric
6 form in 12, again the image shows an output
7 from 12 to 13, it will check that, it will
8 check that, it will check which of these
9 objects stored are actually matching to the,
10 compared to object which is given as a
11 possible destination.

12 So, for example, suppose I'm
13 looking for rectangle objects and I have
14 both rectangle, squares and anything which
15 has four sides with edges.

16 Now, if I am looking for an
17 object which is big in size, then I can
18 remove the small object; if I'm looking for
19 object which is square and not rectangle,
20 then I can remove the rectangle. This is
21 the part this one is talking about.

22 Q. Let's move to reference numeral

1 14. What is reference numeral 14
2 representing?

3 A. 14. Give me one second. 14 is
4 after 13. Yes. I just wanted to check that
5 it's input from there.

6 "A unit for acceptance analysis,
7 14, is provided, which, based on the
8 comparison of selected geometric objects,
9 analyzes the shape of the image formation of
10 the objects in the image data, based on the
11 knowledge of the imaging properties of the
12 imaging sensor in relation to its
13 surrounding field."

14 Q. What does that mean to you as a
15 person of ordinary skill in the art?

16 A. I have identified this object
17 which has four sides. And remember when an
18 object is imaged by an imaging sensor,
19 rectangle may not look rectangle, it may be
20 a trapezoid, or if my object is in such a
21 place where this trapezoid would appear at
22 the top of the image.

1 So now this step what I'm going
2 to do is say my camera properties says if my
3 destination is a rectangle, it would
4 probably appear as a trapezoid and it will
5 probably appear at the top. So if I have
6 trapezoids appearing at the bottom of other
7 places, I can reject them and now I know the
8 top one is the only one I'm looking for.

9 Q. So is it fair to say that the
10 pipeline you were talking about with Mr.
11 Webb is shown in Figure 1?

12 A. Absolutely. I probably should
13 have brought it up earlier.

14 Q. That's why we have redirect. So
15 I just want to direct your attention to
16 another passage. Can you look at column
17 five, line 19? Can you just -- you can read
18 it out loud or to yourself, going to line 19
19 going to about line 25.

20 A. Column five?

21 Q. Yep.

22 A. Okay. So "the geometric objects

1 pieced together by the tree traversal
2 algorithm, in connection with the rules
3 derived from the geometric shape of the
4 destination, undergo an additional
5 acceptance analysis. In this connection,
6 the image data are compared in a comparator
7 unit, with the aid of a matching algorithm,
8 to object patterns describing the
9 destination stored in a memory."

10 Q. So what does that mean as a
11 person of ordinary skill in the art?

12 A. So I have given the definition
13 of destination which I have stored and now I
14 am trying to make sure that whatever has
15 been received through the prior steps
16 actually is conforming to that pattern which
17 has been given to me in the memory.

18 Q. Great. That's pretty helpful.
19 Can I also direct you to the same column,
20 62? Can you read from line 62 through the
21 second line of column six?

22 A. "The objects, which are scaled

1 and oriented in comparator unit by the
2 matching algorithm, subsequently undergo a
3 further acceptance analysis in unit 15. In
4 one especially advantageous type of
5 acceptance analysis, in those cases in which
6 the surrounding field is recorded by the
7 sensor from an elevated position, those
8 objects which do not exhibit any distorted
9 images, as compared to their usual geometric
10 shapes, are rejected as potential
11 destinations."

12 Q. Okay. Can you explain as a
13 person of ordinary skill in the art what
14 that passage means?

15 A. This means that whenever you are
16 imaging an object, if you take a head-on
17 image, the shape of the object is mostly
18 retained, but if you are imaging it say, for
19 example, from the top or from the side, then
20 you have something what we call perspective
21 projection and other kind of image
22 properties which can lead to a change in the

1 shape.

2 So here what it is telling, that
3 even though my geometric objects could have
4 conformed to the original geometric shapes,
5 here I'm checking that the image from above,
6 does it conform to how the image of such a
7 destination would appear given that I know
8 the position and orientation of the image
9 sensor.

10 And if it does not conform to
11 that, I can reject those objects.

12 Q. Great. Just for clarity, as a
13 person of ordinary skill in the art, when
14 you see the 13 and the 15 that appear at the
15 bottom of column five, do you understand
16 those as referencing back to Figure 1?

17 A. Yes.

18 Q. Great. And I just have one last
19 bit of questions. If you turn to column
20 seven?

21 A. Column seven, yes.

22 Q. If you could read the first

1 paragraph, as you've been doing, starting
2 lines one through 12?

3 A. "It is also intended, during the
4 vehicle guidance, for the position of the
5 objects stored as potential destination in
6 the object list to be continuously
7 monitored, so that, in the event that the
8 originally most proximate destination can no
9 longer be easily reached due to
10 circumstances, that potential destination is
11 selected as a new, most proximate
12 destination, which, on the basis of the
13 active position of the motor vehicle, may
14 best be reached in consideration of its
15 steering properties and capabilities. If a
16 new destination is thus ascertained to be
17 the nearest destination to the vehicle,
18 then, on the basis of the active position, a
19 trajectory describing an optimizing travel
20 path to this destination must be computed."

21 Q. There is a lot in that
22 paragraph. Can you just help explain your

1 understanding of that paragraph?

2 A. Give me a couple of minutes.

3 Q. Take your time.

4 A. It means that the original most
5 proximal destination can no longer -- so
6 what it tells is if the current destination
7 identified as the most proximate is somehow
8 not reachable by the current location of the
9 vehicle, then we will consider the next
10 proximate destination to be reached as the
11 next option for the destination and we will
12 design the new path to go to that
13 destination.

14 Q. That paragraph uses both the
15 phrase "most proximate" and "nearest". Do
16 you understand those terms in the context of
17 that paragraph?

18 A. Oh. To the nearest destination.
19 In this case the metric is telling that it
20 is the nearest distance.

21 Q. Great. And I'm sorry. I want
22 to touch on one more questions. Can you

1 look at Figure 2?

2 A. Figure 2. Yes.

3 Q. What is Figure 2?

4 A. Figure 2 is showing the vehicle
5 with the wheels. It is showing I think
6 the -- there is a camera on the top which is
7 looking that is an image sensor, and on the
8 top it is showing a potential destination
9 and it is the arrow is showing where the
10 vehicle is most likely going to be moving,
11 the direction in which the vehicle is going
12 to be most likely moving.

13 Q. In Figure 2, what is reference
14 numeral 26 pointing at?

15 A. 26. Give me a minute --

16 Q. Yep.

17 A. -- to go and check. I think --
18 okay. 32. As well as its loading platform
19 end region as well as the route and cargo
20 door. It is a cargo door.

21 Q. Okay.

22 MR. THEISS: I have no further

1 questions. Any recross, Mr. Webb?

2 MR. WEBB: No recross from me.

3 MR. THEISS: Great. We can
4 consider the deposition closed then.

5 (Whereupon, at 2:43 p.m., the
6 deposition of ADITI MAJUMDER,
7 Ph.D., was concluded.)

8 * * * * *

9 (Whereupon, it is hereby
10 stipulated and agreed that the reading and
11 signature by the witness be, and the same,
12 is hereby waived.)

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1 UNITED STATES OF AMERICA)

2 ss:

3 DISTRICT OF COLUMBIA)

4 I, ROBERT M. JAKUPCIAK, an RPR and
5 Notary Public within and for the District of
6 Columbia do hereby certify:

7 That the witness whose deposition
8 is hereinbefore set forth, was duly sworn
9 and that the within transcript is a true
10 record of the testimony given by such
11 witness.

12 I further certify that I am not
13 related to any of these parties to this
14 action by blood or marriage and that I am in
15 no way interested in the outcome of this
16 matter.

17 IN WITNESS WHEREOF, I have
18 hereunto set my hand this 23rd day of
19 January, 2026.

20



21 My Commission Expires:

22 February 28, 2029

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