

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
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|----|--------------------------|---|-----------------------|
| 5 | LIBERTY MUTUAL INSURANCE |) | |
| | COMPANY, |) | No. CBM2012-00002 |
| 6 | |) | CBM2012-00004 (JL) |
| | Petitioner, |) | Patent 6,064,970 |
| 7 | |) | |
| | vs. |) | No. CBM2013-0004 (JL) |
| 8 | |) | Patent 8,090,598 |
| | PROGRESSIVE CASUALTY |) | |
| 9 | INSURANCE COMPANY, |) | No. CBM2012-0003 |
| | |) | CBM2013-0009 (JL) |
| 10 | Patent Owner. |) | Patent 8,140,358 |
| | |) | |

11
12 VIDEOTAPED DEPOSITION OF SCOTT ANDREWS
Palo Alto, California
13 Tuesday, September 24, 2013
Volume 2
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18 Reported by:
19 LESLIE ROCKWOOD, RPR, CSR 3462
20 Job No. 65807
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1 (Exhibit Liberty Mutual 1004, Japanese
2 Unexamined Patent Application Publication,
3 H4-182868, 11/19/90, pages 1 - 42, having
4 been previously marked, was referred to.)

5 BY MR. WAMSLEY:

6 Q. We also have Liberty Mutual Exhibit 1021 in
7 that matter, which is an excerpt from a book on fuzzy
8 logic by Yen and Langari.

9 Am I correct?

10 A. That's correct.

11 (Exhibit Liberty Mutual 1021, Fuzzy Logic,
12 Intelligence, Control, and Information, Yen
13 and Langari, pages 1 - 55, having been
14 previously marked, was referred to.)

15 BY MR. WAMSLEY:

16 Q. And then finally we have a paper called "Black
17 Magic," which is Liberty Mutual Exhibit 1008 in this
18 matter; is that correct?

19 A. That's correct.

20 (Exhibit Liberty Mutual 1008, An Interest
21 in Black Magic - Motor Technology, pages 1
22 - 2, having been previously marked, was
23 referred to.)

24 BY MR. WAMSLEY:

25 Q. Okay. I'd like to direct you to your rebuttal

1 declaration, Mr. Andrews, Exhibit 1019.

2 A. Okay.

3 Q. And in particular to paragraph 6. And in the
4 first sentence of that paragraph, you testify that fuzzy
5 logic was well-established and fairly common by 1996.

6 Do you see that?

7 A. I see that.

8 Q. Okay. And is the basis for that opinion the
9 existence of the book by Wang called "Adaptive Fuzzy
10 System and Control," dated 1994?

11 A. Well, actually the basis for that is described
12 in the subsequent paragraph. Part of it is the book by
13 Wang. Let me find it here. Yes, part of it is the book
14 by Wang. Part of it is the book by Langari and Yen.
15 Part of it is from my own experience leading a group of
16 engineers that were doing work with fuzzy logic.

17 Q. All as described in this paragraph; is that
18 right?

19 A. Yes.

20 Q. Okay. The book that you cite which is
21 Exhibit 1021 by Langari and Yen --

22 A. That's right.

23 Q. -- what you have quoted there indicates that
24 the book takes the view that fuzzy logic is an emerging
25 technology; correct?

1 MR. MYERS: Objection. 402, 403. And for the
2 record, as in previous depositions, I'm simply going to
3 cite the number of the Federal Rule of Evidence going
4 forward in the deposition rather than make a full
5 citation or state a full grounds for my objection, I'll
6 simply state the rule number.

7 MR. WAMSLEY: Well, let me just follow up to
8 clarify. You're not intending to reserve the right to
9 assert a different objection later to my question, are
10 you?

11 MR. MYERS: I'm not going to assert a different
12 rule.

13 MR. WAMSLEY: Okay. So any objection within
14 that rule is what you're saying?

15 MR. MYERS: Correct.

16 MR. WAMSLEY: Okay.

17 MR. MYERS: I -- it's my --

18 MR. WAMSLEY: Now we understand each other.

19 MR. MYERS: Right. My understanding is the
20 Patent Trial and Appeal Board doesn't want speaking
21 objections or a full explanation on the record, and as a
22 consequence, I'm going to give you the rule number of
23 the Federal Rule of Evidence that I'm objecting under.
24 And then if that comes up, then I'll have the
25 opportunity to explain the basis for that objection in

1 either in front of the board or in a paper that's filed
2 with the board if it becomes necessary.

3 MR. WAMSLEY: We understand each other, then,
4 Jim. Thank you for the clarification.

5 Could I ask you to read the question back,
6 please.

7 (The record was read by the reporter
8 as follows:

9 "QUESTION: What you have quoted there
10 indicates that the book takes the view that
11 fuzzy logic is an emerging technology;
12 correct?")

13 THE WITNESS: I wouldn't characterize it that
14 way. Actually, it says that it's been accepted as an
15 emerging technology since the late 1980s.

16 BY MR. WAMSLEY:

17 Q. And this is as of 1999, when this book was
18 published; correct?

19 A. That's correct, I think, yes.

20 Q. Now you say in the next sentence that by 1996,
21 you had studied several fuzzy logic systems and
22 supervised many engineers with similar fuzzy logic
23 experience.

24 Do you see that?

25 A. I see that.

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1 identify these particular parameter values associated
2 with Kosaka's membership functions.
3 Do I have that right?
4 A. I think almost. I think I said that last time
5 we did this.
6 I think the way I've stated it here in the
7 declaration is not that a person of skill in insurance
8 would have that ability. I've stated that in order to
9 determine these values, you would need someone who was a
10 person of ordinary skill in the insurance aspects of
11 this kind of system.
12 Again, it's not just any old person who knows
13 something about insurance; it's somebody who is actually
14 knowledgeable about, for example, understanding the
15 risks associated with following distances and swerving
16 and the other parameters that Kosaka identifies here.
17 So you'd need a person who was knowledgeable
18 about risks associated with that so that they would then
19 be able to actually determine what these values are.
20 And that's what I mean by a person skilled in the
21 insurance aspects of the '970 patent.
22 Q. But in fact, you have no expertise that would
23 allow you to testify whether that person knowledgeable
24 about those risks that you just referred to would be an
25 expert or instead someone with lesser skill, do you?

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1 correct?
2 A. That's right.
3 Q. And in your opinion, you say a person of
4 ordinary skill would understand that risk evaluation
5 value to be a single crisp value; correct?
6 A. That's what I said.
7 Q. And that's because of what you describe in the
8 next sentence there of the process called
9 defuzzification.
10 Am I right?
11 MR. MYERS: Objection. 402, 403.
12 THE WITNESS: The process called
13 defuzzification is the process that would take the
14 membership -- the output membership values, membership
15 function values, and convert them into a single crisp
16 value.
17 BY MR. WAMSLEY:
18 Q. And with that understanding, am I correct that
19 it's because of that, the existence of that
20 defuzzification process, that you are of the opinion
21 that Kosaka's risk evaluation value would be a single
22 crisp value?
23 MR. MYERS: Objection. 402, 403.
24 THE WITNESS: I'm not sure that I would
25 characterize it that way. It's not because of the

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1 MR. MYERS: Objection. 402, 403.
2 THE WITNESS: Are you asking me if I would be
3 able to determine whether a given person was an expert
4 versus a person of ordinary skill in those aspects?
5 BY MR. WAMSLEY:
6 Q. That's a different question than the one I
7 asked.
8 A. Okay.
9 MR. WAMSLEY: Let me try having it read back,
10 and if it's still not working, we'll rephrase.
11 (The record was read by the reporter
12 as follows:
13 "QUESTION: But in fact, you have no expertise
14 that would allow you to testify whether that
15 person knowledgeable about those risks that you
16 just referred to would be an expert or instead
17 someone with lesser skill, do you?")
18 MR. MYERS: Objection. 402, 403.
19 THE WITNESS: I guess probably not because the
20 delineation of a person of ordinary skill versus
21 expertise in insurance isn't really my field.
22 BY MR. WAMSLEY:
23 Q. Okay. Let's move on to paragraph 9 of your
24 rebuttal declaration. And here, among other things, you
25 testify as to the risk evaluation value in Kosaka;

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1 defuzzification process. The issue is that there would
2 be no usable output until you defuzzified it.
3 BY MR. WAMSLEY:
4 Q. In your testimony in your declaration about
5 defuzzification, you cite to the Langari book; correct?
6 A. That's right.
7 Q. So let's look at that. That's Exhibit 1021.
8 And you particularly cite a couple of pages
9 there. Let's look at the first such citation at page
10 38. Tell me when you're there.
11 A. I'm there.
12 Q. And you see the reference to defuzzification in
13 the middle of the page there; correct?
14 A. Yes.
15 Q. And according to this text, this is an optional
16 step in fuzzy logic; correct?
17 A. That's what it says here.
18 Q. So in that respect, a designer would be free to
19 not use defuzzification as part of the fuzzy logic
20 system.
21 Am I right?
22 MR. MYERS: Objection. 402, 403.
23 THE WITNESS: I don't think it really says
24 that. I mean, he says for applications that need a
25 crisp output, for example, in control systems. So any

1 time you are going to ultimately try to make use of the
2 output in some specific way, you need a value that you
3 can use. You don't need percentages of membership in a
4 membership function.

5 I don't know what you would -- in '970, I don't
6 know how you would determine an insurance premium based
7 on the notion that someone was 20 percent low risk and
8 50 percent medium risk and 70 or 30 percent high risk.
9 You would ultimately have to calculate what is the
10 aggregate risk from that, which is ultimately getting a
11 crisp value out of the fuzzy system.

12 I think the fact that he says these are
13 optional is more if you were having cascaded fuzzy logic
14 functions, you don't necessarily have to defuzzify and
15 refuzzify and defuzzify and refuzzify every single time.

16 But at the end of the day, having an output of
17 a fuzzy system that isn't a value that you can use isn't
18 very useful.

19 BY MR. WAMSLEY:

20 Q. You made a reference to control systems in your
21 last answer. You'd agree with me that the way fuzzy
22 logic is used in Kosaka is it's not controlling
23 anything, is it?

24 MR. MYERS: Objection. 402, 403.

25 THE WITNESS: I think it's ultimately

1 controlling the insurance premium.

2 BY MR. WAMSLEY:

3 Q. You -- so, in your opinion, coming up with risk
4 evaluation values that are then used in insurance
5 premium calculation is an example of a control system?

6 A. I mean, I could take you through my logic on
7 that, but it's not a control system as in a -- you know,
8 a stability control for an airplane or something like
9 that or a cruise control system, but in fact, it is --

10 Q. Or an elevator control system?

11 A. Right. But it is in fact something of a
12 feedback system. If you consider that you are going to
13 measure risk and the associated potential for loss
14 associated with that and then decide what factors in
15 driving contribute to that, you are actually ultimately
16 building a system that is a control system. Because if
17 you base your premiums on the -- on these factors in the
18 right way, then eventually new drivers are going to
19 drive in that way, and you'll be able to assess their
20 risk accurately.

21 So at the end of the day, you have to have a
22 crisp value to assign some level of risk. You just
23 can't think that a system that has real-world
24 application is going to end up with a membership set
25 function and you're going to use that. So somewhere you

1 have to defuzzify this.

2 Q. And in your rebuttal declaration in
3 paragraph 9, you say: "Kosaka explicitly describes
4 using defuzzification."

5 Do you see that?

6 A. Yes, I do.

7 Q. So you've still got Kosaka in front of you;
8 right, Mr. Andrews?

9 A. Uh-huh.

10 Q. Would you agree with me that the mention of
11 defuzzification that you've cited to at page 8 of Kosaka
12 is with respect to Kosaka's first fuzzy logic part 62 as
13 shown in Figure 9?

14 A. That's correct.

15 Q. Would you also agree with me that nowhere else
16 does Kosaka mention using defuzzification processes with
17 respect to any other output?

18 A. Well, he says the logical output level says
19 the -- this is in the right-hand paragraph of page 8,
20 second paragraph down. So the risk evaluation value
21 resulting from a comprehensive determination carried out
22 at this third fuzzy logic part 65 is then output to the
23 output controller, 66, where the logical output level
24 and the output in accordance with hold time level are
25 sent to the warning device and the monetary amount file.

1 So he's talking about an output level. He's
2 not talking about a series of membership function
3 values. I'm not sure what a warning device or what the
4 controller would do with a series of membership values.

5 And you asked about a control system earlier in
6 relation to Langari, and he's actually saying you output
7 it to an output controller. So maybe it is a control
8 system.

9 He doesn't say explicitly here that the output
10 of the -- or the resulting membership function from
11 fuzzy logic unit 3 is defuzzified, but I don't think he
12 needs to say that.

13 Q. You understand in looking at Figure 9 -- and
14 feel free to consult the accompanying text -- you agree
15 with me that the inputs to Box 65, which is fuzzy logic
16 unit 3, are themselves fuzzy values?

17 A. He talks about that in the top of page 8. So
18 you'll see these are also input as fuzzy input values.

19 Q. And that's what you would expect; right?
20 Because fuzzy values are -- being used in fuzzy logic
21 unit 1 and 2; right?

22 A. That is what you would expect. You could have
23 them be completely freestanding. So you could implement
24 fuzzy logic 1 as a standalone unit that takes analog
25 inputs or even digital representations of analog input