

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner

v.

AUTONOMOUS DEVICES, LLC,
Patent Owner

Case: IPR2023-01055
U.S. Patent No. 11,238,344

**PATENT OWNER'S REPLY IN SUPPORT OF
CONTINGENT MOTION TO AMEND**

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I. INTRODUCTION

PO submits this Reply in support of its Motion to Amend (“MTA”) (Paper 28). As the Board noted in its Preliminary Guidance (“Prelim. Guid.”) (Paper 32), Petitioner’s opposition (“Opp.”) (Paper 31) is replete with errors on virtually every issue, including those relating to §§ 101 and 103. To the extent Petitioner attempts to inject any new arguments in its forthcoming sur-reply, such attempts should be rejected, as PO would not have notice of such new arguments. The MTA should be granted for the reasons set forth in the MTA, the Preliminary Guidance, and below.

II. THE SUBSTITUTE CLAIMS ARE PATENT-ELIGIBLE

The Board correctly identified numerous flaws in Petitioner’s § 101 arguments (Opp., 1-11), regarding *both* steps of the *Alice* test. Prelim. Guid., 11-13.

A. Step 1 of the *Alice* Test Shows the Substitute Claims Are Patent-Eligible.

Petitioner’s contention that the “substitute claims are directed to an abstract idea of determining a manner of operating a device in a current circumstance based on how that that device, or another device, operated in similar circumstance(s) in the past”—which Petitioner alleges is “a mental process that continues to be performed in the mind by humans in countless contexts each day”—is absurd. Opp., 2. As the Board noted, the claimed operations and systems implementing them *exist exclusively in the realm of computers and control systems, and cannot practicably*

be performed in the human mind or with pen and paper, and thus do not amount to, and are the opposite of, a mental process. Prelim. Guid., 12.

For example, the computing system/processor circuit(s) in claims 21–26 are programmed for “anticipating the first one or more instruction sets . . . based on at least a partial match” between a “second circumstance representation” and a “first circumstance representation” with each circumstance representation representing a circumstance “detected at least in part by one or more sensors” of a device and “executing the first one or more instruction sets for operating the first device” where a device “autonomously performs one or more operations defined by the first one or more instruction sets.” The substitute claims clearly provide a technological solution rooted in computer and control systems technologies for “artificially intelligent systems, devices, and methods for learning and/or using a device’s circumstances for autonomous device operation.” Ex. 1001, Title, Abstract; *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257–58 (Fed. Cir. 2014). The claimed processor and device operations for learning, anticipating, executing, and autonomously performing relevant operations *cannot be practically performed in the human mind*. See *SiRF Tech., Inc. v. Int’l Trade Comm’n*, 601 F.3d 1319, 1331, 1333 (Fed. Cir. 2010).

Petitioner presents conclusory arguments, ignoring or grossly oversimplifying the limitations recited in the substitute claims. When the limitations are properly

considered, they (including the ones originally found in claim 1, but certainly with the addition of limitations via amendment) show that the claims are not mere mental processes, and are not directed to an abstract idea. This alone resolves the *Alice* inquiry, as Petitioner has failed at step 1.

B. Step 2 of the *Alice* Test Further Shows the Substitute Claims Are Patent-Eligible.

Although the substitute claims do not recite an abstract idea (*see* above regarding step 1), Petitioner also fails regarding step 2. At minimum, the additional limitations added in the substitute claims (e.g., the first and second object representations including first and second data structures; the processing of digital pictures to detect a type, location, and size of the first/second objects; the first and second data structures are correlated with instruction sets) recite practical technical features and integrated practical technical applications that enable autonomous device operation responsive to device-specific environmental conditions and circumstances.

The added limitations also improve computer and autonomous device performance in view of the conventional storage-intensive, processing-intensive, and inaccurate image-based systems, e.g., by using circumstance and object representation data structures including only several key object properties (e.g., type, coordinates, and size) detected by processing digital pictures that help achieve less

memory usage, faster computation time, and improved object representation accuracy for the autonomous operating or driving. Thus, although the substitute claims are not directed to an abstract idea in the first place, the additional limitations further amount to significantly more by improving the functioning of the computer system itself and the control systems technology for autonomous operating or driving. Further, the added limitations, and especially their combination, are the opposite of well-understood, routine, and conventional.

III. THE SUBSTITUTE CLAIMS ARE PATENTABLE OVER THE ART

The substitute claims distinguish the prior art. The arguments below mention claim 21 but also apply to the other substitute claims, which recite similar features.

A. The Substitute Claims Are Patentable Over Grotmol-Hickman.

1. Grotmol-Hickman Does Not Disclose or Suggest “Processing One or More Digital Pictures to Detect ... a Location of the First Object, and a Size of the First Object”

The preliminary guidance confirms that Grotmol-Hickman does not disclose or suggest at least: “processing one or more digital pictures to detect ... a *size of the first object*” in [21.10]. Hickman discloses that “image data received from the robot” is analyzed to determine whether the object in the image data corresponds to a GID in a knowledgebase (Ex. 1005, 17:1-16), and further discloses only storing, but not detecting, physical attribute data in connection with the GID (*id.*, 18:4-16). *As the Board correctly noted, beyond storing attribute data, Hickman does not disclose*

detecting physical attributes (including location and size) of an object, and Petitioner has not established this point. Prelim. Guid., 7-8. Thus, Grotmol-Hickman also does not disclose nor mention anything about: “processing one or more digital pictures to detect ... a location of the first object” in [21.10], location being a physical attribute.

**2. Grotmol-Hickman Does Not Disclose or Suggest
“Generating the First Data Structure That Includes ... a
Coordinate Indicating the Detected Location of the First Object,
and a Computer Model Indicating the Detected Size of the First
Object”**

The preliminary guidance further confirms that Grotmol-Hickman does not disclose at least: “generating the first data structure that includes ... a computer model indicating the *detected* size of the first object.” Prelim. Guid., 8-9. And, since Hickman does not disclose *detecting any physical attributes* as the Board noted and as discussed above, Hickman also does not disclose generating the first data structure that includes a coordinate indicating the *detected* location.

As the Board further correctly noted, Hickman merely discloses that physical attribute data is only stored (but not detected) in knowledge base 308 and sent in response to a query when an object is determined to correspond to a particular type. Prelim. Guid., 8-9; Ex. 1005, 17:1-33, 18:4-18. Other than vaguely mentioning various unrelated disclosures of Hickman about knowledge bases 306/307 and data structure 314 (Opp., 21-22), Petitioner simply has not addressed the specific claim

language of [21.11], nor can it, because Hickman does not even mention this feature. Further, Petitioner has not provided proper obviousness analysis, and instead only made a single conclusory assertion that is unsupported (apart from citation to expert testimony that just parrots the opposition brief). Opp., 21-22; Ex. 1010, ¶90.

**3. Grotmol-Hickman Does Not Disclose or Suggest
“Processing One or More Digital Pictures to Detect ... a Location
of the Second Object, and a Size of the Second Object” and
“Generating the Second Data Structure That Includes ... a
Coordinate Indicating the Detected Location of the Second
Object, and a ... Model Indicating the Detected Size of the Second
Object”**

For limitations [21.12]-[21.14], the opposition merely cites its earlier analysis of [21.9]-[21.11] (Opp., 23) that fails for at least the same reasons as presented above.

**4. Grotmol-Hickman Does Not Disclose or Suggest the Added
“Correlated With...” Limitation**

Firstly, since Grotmol-Hickman does not disclose generating first and second data structures as noted by the Board and discussed above, Grotmol-Hickman cannot and does not disclose or suggest “the first data structure and the second data structure are correlated with the first one or more instruction sets” in [21.15].

Secondly, Petitioner points to Hickman’s disclosure of the tasks field. Opp., 24 (citing Ex. 1005, 2:65-3:8, 15:28-43, 18:34-20:20, FIG. 3). But, Petitioner ignores that due to the recitation of “first data structure *and* second data structure,” *each* of the first/second data structures must be correlated with the *same* first one or

more instruction sets since the first and second data structures represent multiple (two) objects of the same circumstance and the first one or more instruction sets are learned in this multi-object circumstance. Since *Hickman only discloses a robot's manipulation of a single object, as opposed to a robot's operation in a multi-object circumstance*, the tasks field is for manipulation of a single object and Hickman never even mentions multiple objects in a single circumstance being correlated with the same instruction sets.

Thirdly, the opposition does not clearly say what in Hickman is being mapped to the first and second data structures. Opp., 20-24. If the first data structure is data structure 314 containing the tasks field, then Petitioner's analysis is deficient regarding the second data structure (and how it, too, would be correlated with the *same* first one or more instruction sets).

Fourthly, the opposition ignores that the Petition mapped the "first one or more instruction sets" to *Grotmol's* motor control indications. Pet. (Paper 1), 13. The opposition brief does not even mention Grotmol for this limitation and consequently Petitioner failed in its mapping. Petitioner has thus cherry-picked isolated teachings from disparate references without providing any linking obviousness analysis.

Thus, the opposition brief presents a jumbled medley of isolated disclosures, and Petitioner's mapping lacks consistency or comprehensibility. To the extent

Petitioner intended to propose some combination of data structures 313-315, the opposition brief and supporting expert declaration do not say so with any specificity. PO cannot be expected to divine Petitioner's intent from Petitioner's random assortment of statements.

B. The Substitute Claims Are Patentable Over Grotmol-Tolstedt.

1. Grotmol-Tolstedt Does Not Disclose or Suggest “Processing One or More Digital Pictures to Detect ... a Size and a Location”

The preliminary guidance confirms that Grotmol-Tolstedt does not disclose or suggest at least: “*processing one or more digital pictures to detect ... a size of the first object*” in [21.10]. Prelim. Guid., 10. Petitioner points to (i) Tolstedt's processing sensor data to classify objects detected in sensor data and identifying attributes of the objects (Opp., 22), (ii) Tolstedt's “classified objects may include dimensional information” including height and width (*id.*), and (iii) a single conclusory statement that in the hypothetical Grotmol-Tolstedt system, the location information of classified objects would have included a coordinate including the detected location (*id.*, 22-23). But these contentions presented by Petitioner say nothing about how a size of the first object is *detected* by *processing one or more digital pictures*.

As the Board correctly noted, Tolstedt discloses that sensor processing algorithms classify sensor data and the “classification may include identifying objects that have been detected in the environment”—e.g., “classify[ing] an object

as a person, curb, tree, ...” (Prelim. Guid., 10; Ex. 1015, ¶83), but does not disclose detecting a size of an object by *processing digital pictures*. Further, Petitioner has not provided proper obviousness analysis, instead only offering a conclusory assertion. Opp., 22-23.

For at least the same reasons, Grotmol-Tolstedt does not disclose or suggest: “*processing one or more digital pictures to detect ... a location* of the first object” in [21.10].

2. Grotmol-Tolstedt Does Not Disclose or Suggest “Generating the First Data Structure”

The preliminary guidance confirms that Grotmol-Tolstedt does not disclose: “generating the first data structure that includes ... a computer model indicating the detected size of the first object” in [21.11]. Prelim. Guid., 10. Firstly, since Tolstedt does not disclose or suggest detecting a size of the first object as discussed above in Section III.B.1, Tolstedt cannot and does not disclose or suggest generating the first data structure that includes a model indicating the detected size.

Secondly, the opposition points to paragraphs 83-88 of Tolstedt (Opp., 22-23), but those paragraphs do not disclose a data structure. The opposition then states that a POSITA would have understood that certain information disclosed in Tolstedt “is stored in data fields (which are a type of data structure, as explained in the ’344 patent) in a knowledge base” and “[e]ach detected object in image [*sic*] would have

its own data structure” (*id.*, 22), but the paragraph of the expert declaration cited as support just parrots the opposition (Ex. 1010, ¶91) and Petitioner has not provided any proper obviousness analysis to support this point.

In fact, Tolstedt only shows a box for knowledge base 608 in Fig. 6, but does not provide any description of how it or anything in it is structured for a mapping to the recited first data structure analysis to be even possible. Thus, ***Tolstedt does not disclose any data structure***, let alone the first data structures with all of its recited limitations.

3. Grotmol-Tolstedt Does Not Disclose/Suggest “Processing ... Digital Pictures to Detect ... a Size and a Location of the Second Object” and “Generating the Second Data Structure”

For limitations [21.12]-[21.14], the opposition merely cites its earlier analysis of [21.9]-[21.11] (Opp., 23-24) that fails for the same reasons as presented above.

4. Grotmol-Tolstedt Does Not Disclose/Suggest the Added “Correlated With...” Limitation

Grotmol-Tolstedt does not disclose or suggest “the first data structure and the second data structure are correlated with the first one or more instruction sets” in [21.15]. Firstly, the opposition merely states that it would have been obvious that in the hypothetical Grotmol-Tolstedt system certain data fields are correlated with instructions/actions for operating the vehicle, without any proper pet-supporting analysis or justification (except a citation to the expert declaration, which parrots the opposition). Opp., 24. In fact, ***Tolstedt does not even mention anything being***

correlated, let alone each of the recited first/second data structures correlated with the first one or more instruction sets.

Secondly, the opposition ignores that the Petition mapped the “first one or more instruction sets” to *Grotmol’s* motor control indications. Pet. (Paper 1), 13. The opposition does not even mention Grotmol for this limitation and consequently Petitioner fails in its mapping. Petitioner has thus cherry-picked isolated teachings from disparate references without providing any linking obviousness analysis.

C. Petitioner’s Obviousness Analysis is Deficient

For the limitations discussed in Sections III.A.1-4 and III.B.1-4 (and all other added limitations), Petitioner has not presented any obviousness rationale/analysis (e.g., motivation to combine or modify, pro/con considerations, reasonable expectation of success) *tied to the claim language, which dooms the alleged combinations of the references*. Instead, Petitioner has merely presented statements regarding isolated disclosures of the secondary references. The opposition includes sections regarding motivation to combine Grotmol and Hickman and motivation to combine Grotmol and Tolstedt, but only at an abstract, high level of generality, completely divorced from the specific recited limitations. Opp., 13-19. Therefore, Petitioner has failed to provide, for either § 103 combination, the required obviousness rationale for arriving at the specific recited limitations.

D. Dr. Janet's Opinions Are Conclusory.

Dr. Janet has not added anything of substance to Petitioner's attorney arguments regarding the prior art, as his testimony parrots the opposition verbatim for limitations discussed above in Sections III.A.1-4 and III.B.1-4 (for both § 103 combinations), and similarly parrots it verbatim or near-verbatim for the other added limitations. His testimony is thus of no probative value and should be rejected.

IV. CONCLUSION

For the reasons set forth above and in the MTA, the MTA should be granted.

Date: July 11, 2024

Respectfully submitted,

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CERTIFICATION OF SERVICE

The undersigned hereby certifies that the foregoing **PATENT OWNER'S
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