

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner

v.

AUTONOMOUS DEVICES, LLC,
Patent Owner

Case: IPR2023-01054
U.S. Patent No. 10,452,974

**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’s preliminary guidance correctly identified numerous flaws in Petitioner’s § 101 arguments, regarding *both* steps of the *Alice* test. Prelim. Guid., 19-23. Even a cursory glance at the substitute claims reveals they are as far from abstract ideas as can be. If these substitute claims are deemed patent-ineligible, it is hard to imagine what would pass § 101.

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., 20.

For example, the computing system/processor circuit(s) in the substitute claims are programmed for “executing . . . instruction sets for operating the first device” with the instruction sets learned in a learning process and anticipated by the processor circuits based on an analysis of the device’s circumstances and data structures that represent these circumstances, the instruction sets enabling that device and other devices to “autonomously perform[] one or more operations defined by the . . . 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 circumstance representation includes a first collection of object representations [representing multiple objects detected at a first time or during a first time period, and comprising a first data structure including types and coordinates of multiple objects, and the first data structure being correlated with the first one or more instruction sets for operating the first device],” and also similar limitations for the second circumstance representation) 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., types and coordinates) that help achieve less memory usage, faster computation, 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 added 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 the “Second Data Structure...” Limitation

The preliminary guidance confirms that Grotmol-Hickman does not disclose: “a second data structure that includes: labels indicating types of the multiple objects, and coordinates indicating locations of the multiple objects” (MTA, Appx. A).

Claim 21 requires that the first and second data structures each store information about the *same* objects, by reciting “the multiple objects” (note the antecedent basis is recited at “the first collection of object representations represents multiple objects”—i.e., the same multiple objects referred to for the first data structure). For this limitation, Petitioner provides a single paragraph, with only three sentences of analysis that entirely evade the foregoing aspect of this limitation. Opp., 22. And the first sentence of that paragraph cites “the reasons explained above with respect to feature 2” (*id.*)—which shows that Petitioner has simply relied on its analysis for an earlier limitation regarding “first data structure,” which does not suffice here.

Petitioner does not even clearly identify which data structure of Hickman is being mapped for this limitation, instead vaguely mentioning that “Hickman discloses data structures” (i.e., plural) and repeatedly citing “Hickman’s structure 314 (or 313).” Opp., 22. As the Board correctly noted, Petitioner has not identified *two* data structures that *each* include information (types and locations) for the *same* multiple objects (as detected at different times or time periods), Prelim, Guid, 11-12.

2. Grotmol-Hickman Does Not Disclose or Suggest the Added “Correlated With...” Limitations

The preliminary guidance further confirms that Grotmol-Hickman does not disclose: “the first data structure is correlated with the first one or more instruction

sets.” MTA, Appx. A. As noted in the preliminary guidance, Hickman’s data structure 313 does not include the tasks field (which Petitioner relies upon for a data structure correlated with instruction sets); data structure 314 includes the tasks field but does not include the LOC field (which Petitioner relies upon for a data structure including coordinates indicating objects’ locations); and data structure 315 does not include types and locations for multiple objects. Prelim. Guid., 13. Thus, Petitioner vaguely identifies one data structure (313) for types and locations but has not established that it is “correlated with ... instruction sets”; identifies a second data structure (314) that has a tasks field but does not even contemplate locations information; and identifies a third data structure (315) without even explaining how it would include types and coordinates.

As the Board correctly noted, “Petitioner has *not* sufficiently explained how the teachings of Grotmol and Hickman would render obvious the claimed ... ‘wherein the first data structure is *correlated* with the first one or more instruction sets for operating the first device’).” Prelim. Guid., 11. Furthermore, 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.

The preliminary guidance also confirms that Grotmol-Hickman does not disclose: “the second data structure is correlated with the second one or more instruction sets.” MTA, Appx. A; Prelim. Guid., 11-13. Firstly, since Grotmol-Hickman does not disclose the second data structure as noted by the Board and discussed above, Grotmol-Hickman cannot and does not disclose or suggest “the second data structure is correlated with the second one or more instruction sets.”

Secondly, the entirety of Petitioner’s analysis is a *single, conclusory sentence* with no required separate analysis that should be rejected. Opp., 25. Petitioner mentions “reasons similar to those noted above with respect to substitute feature 4,” but those reasons fail as discussed above. Petitioner cannot rely on its earlier failed analysis for one limitation when attempting to address a second, different limitation.

Thirdly, *instruction sets correlated with the first data structure are different than instruction sets correlated with the second data structure* (note recited first and second instruction sets) that Petitioner does not address at all (and is prohibited from addressing in its sur-reply) and Hickman mentions nothing about.

Fourthly, Petitioner failed in its mapping because the opposition does not mention Grotmol for this limitation yet the Petition mapped the “second one or more instruction sets” to *Grotmol’s* motor control indications. Pet., 13. Thus, Petitioner 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. As the Board correctly noted, 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. Prelim. Guid., 13-14. 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 the “First Data Structure...” and “Second Data Structure...” Limitations

Grotmol-Tolstedt does not disclose: “a first data structure that includes: labels indicating types of the multiple objects, and coordinates indicating locations of the multiple objects” as recited in claim 21. Petitioner mentions Tolstedt's attributes and asserts that “[t]his information is stored in a data structure in a knowledge base” (Opp., 21), but this is unsupported in Tolstedt, is conclusory, and Dr. Janet's declaration merely repeats the language of the opposition. Ex. 1010, ¶82. Tolstedt's data attributes cited by Petitioner (Ex. 1015, ¶¶83-88) *are only scattered data points, not a data structure*. Opp., 20-21. Petitioner has not explained how anything in paragraphs 83-88 of Tolstedt discloses a *data structure*. Petitioner points to Tolstedt's “thematic map, which may contain a spatial pattern of attributes” and says “[t]his map can be stored in the knowledge base,” but has not established why the map is a data structure, and in particular, the claimed first data structure. Opp., 21.

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 structure with all of its limitations.

Grotmol-Tolstedt also does not disclose: “a second data structure that includes: labels indicating types of the multiple objects, and coordinates indicating locations of the multiple objects” as claimed in claim 21. Firstly, the opposition regarding the second data structure fails for the same reasons as presented above regarding the first data structure.

Secondly, Petitioner points to: “In some cases, the second data structure can be a second map of a second location different from the first location.” Opp., 23 (citing Ex. 1015, ¶¶83-88, 123, 134). The inquiry here is not what the second data structure can or cannot be, but what Tolstedt actually discloses or suggests (in this case nothing) the second data structure to be.

Thirdly, as discussed above in Section III.A.1, Claim 21 requires that the first and second data structures each store information about the *same* objects. As the Board correctly noted, Petitioner has not established how Tolstedt discloses or suggests a second map of a second location different from the first location which includes types and locations *of the same multiple objects* from a first map of the

first, different location. Prelim. Guid., 17-18. And *Tolstedt does not disclose any second map*, much less one with all recited limitations of the second data structure.

2. Grotmol-Tolstedt Does Not Disclose or Suggest the Added “Correlated With...” Limitations

Grotmol-Tolstedt does not disclose or suggest “the first data structure is correlated with the first one or more instruction sets” as recited in claim 21. Firstly, the opposition merely states conclusorily that “the first data structure is correlated with...” would have been obvious, without any 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 the first data structure correlated with instruction sets*. Secondly, the opposition ignores that the Petition mapped the “first one or more instruction sets” to *Grotmol’s* motor control indications. Pet., 13. The opposition does not even mention Grotmol for this limitation and consequently Petitioner fails in its mapping. Petitioner has cherry-picked isolated teachings from disparate references without providing any linking obviousness analysis.

The opposition regarding “the second data structure is correlated with...” fails for the same reasons as presented above regarding “the first data structure is correlated with...” Secondly, since Tolstedt does not disclose the second data structure as discussed above, Tolstedt cannot and does not disclose “the second data

structure is correlated with ...” Thirdly, *instruction sets correlated with the first data structure are different than instruction sets correlated with the second data structure* (note recited first and second instruction sets) that Petitioner does not address at all (and is prohibited from addressing in its sur-reply) and Hickman mentions nothing about.

C. Petitioner’s Obviousness Analysis is Deficient

For the limitations discussed above in Sections III.A.1-2 and III.B.1-2 (and indeed, all the other added limitations of the substitute claims), Petitioner has utterly failed to present 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 brief 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 limitations added to the substitute claims. Opp., 12-18. Therefore, Petitioner 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.

Petitioner's expert Dr. Janet has not added anything of substance to Petitioner's attorney arguments regarding the prior art, as his testimony parrots the opposition brief verbatim for limitations discussed above in Sections III.A.1-2 and III.B.1-2 (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

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