

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

IPR2025-00342
U.S. Patent No. 7,336,805

**PETITIONER'S AUTHORIZED REPLY
TO PATENT OWNER'S PRELIMINARY RESPONSE**

In its Preliminary Response (“POPR”) (Paper 8), Patent Owner improperly seeks to avoid the prior art by narrowly interpreting the claims to require unrecited limitations not supported by the ’805 patent or the extrinsic evidence. The Board should institute review.

I. The prior art teaches a “*mathematical tree structure*” as claimed.

A. Patent Owner’s unduly narrow interpretation of “*a mathematical tree structure*” is not supported by the claim language, the specification, or the extrinsic evidence.

Patent Owner argues the claim term “*a mathematical tree structure*” is limited to “a single connected hierarchical data structure in which each node has exactly one parent (except for the root) and in which there exists exactly one path between the root and every other node” and “excludes disconnected structures and forests.” POPR, 9, 11. However, neither the claims nor specification of the ’805 patent describe this single tree configuration. Instead, to support its flawed argument, Patent Owner relies entirely on an extrinsic document—Sedgewick (Ex.2006). However, the extrinsic evidence contradicts Patent Owner’s position.

First, Patent Owner ignores the fact the claim language recites “*a mathematical tree structure*,” not “a mathematical tree.” Patent Owner alleges multiple times that Sedgewick distinguishes a “tree” from a “forest.” POPR, 11 (“Sedgewick further makes clear that a ‘forest’ is not a tree.”), 12 (“Sedgewick unambiguously distinguishes a tree from a forest.”). However, Patent Owner does

not—and cannot—assert that Sedgewick distinguishes a “forest” from “*a mathematical tree structure*.” This is because—contrary to Patent Owner’s construction—Sedgewick teaches a forest is an example of “*a mathematical tree structure*.” Ex.2006, 43-44 (original page numbering).

The '805 Patent specifically references Chapter 4 of Sedgewick for “the comprehensive compilation and discussion of **widely varying tree structures**.” Ex.1001, 4:47-51. Sedgewick’s Chapter 4 is titled “**Trees**” and includes an entire section on “**Forests**,” explaining how “**any forest** can be represented as **a binary tree**” and that in some instances “**forests** [are] easier to deal with than nearly **any other kind of tree**.” Ex.2006, 35, 43-44. Contrary to Patent Owner’s implications otherwise, the very chapter of Sedgewick referenced by the '805 patent teaches that a forest is an example of “*a mathematical tree structure*.” *Id.*

Second, the claims of the '805 patent do not include any language indicating that “*a mathematical tree structure*” is limited to a single tree having only one path between the root and the nodes. To the contrary, claim 1 of the '805 patent uses the transitional phrase “the method comprising” and then limitation [1.4.0] recites “...*storing interrelationships of the plurality of edge segments in a mathematical tree structure*” without any specification as to the number of trees in the mathematical tree structure or the interrelationship between the root and nodes of the tree. *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997)

(“‘Comprising’ is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.”). None of the dependent claims of the ’805 patent limit the “*mathematical tree structure*” to Patent Owner’s single tree requirement. Simply put, the claims of the ’805 patent are not limited to a single tree.

Third, the detailed description and prosecution history of the ’805 patent do not limit “a mathematical tree structure” to a single tree. Patent Owner fails to identify any embodiments in the specification of the ’805 patent limiting “*a mathematical tree structure*” to a single tree. POPR, 9-12. Further, the extrinsic evidence Patent Owner points to contradicts Patent Owner’s position. As discussed above, Chapter 4 of Sedgewick—referenced by the ’805 patent for its “discussion of *widely varying tree structures*”—includes an entire section on “forests.” Ex.2006, 43-44. Patent Owner fails to provide any basis for excluding Sedgewick’s example of forests as a type of mathematical tree structure from the claim scope.

The Board should decline Patent Owner’s invitation to redraft the claims, particularly here where Patent Owner is attempting to redraft the claims based on embodiments not disclosed in the specification and in a manner that excludes embodiments from the extrinsic evidence. *See Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339 (Fed. Cir. 2011) (the Federal Circuit “repeatedly and consistently has recognized that courts may not redraft claims.”).

B. Huttenlocher teaches “*storing interrelationships of the plurality of edge segments in a mathematical tree structure*” by storing interrelationships of edge segments in a scale-space segment tree.

Huttenlocher describes the use of “a mathematical tree structure” in the context of Figs. 3 and 4, where Huttenlocher explicitly notes “Figure 4 shows this scale-space segment tree. Each segment in the tree is indicated by its label from Figure 3, and by the type of segment: straight, curve, and open-curve.” Ex.1006, 373-374, Figs. 3-4; Pet., 41-42. The Petition shows and explains how Huttenlocher’s scale-space segment tree stores the interrelationships of the plurality of edge segments in a hierarchical manner based on granularity and relative position. *See* Pet., 41-42 (citing to Ex.1006, 373-374, Figs. 3-4; Ex.1003, ¶¶107-108). The ’805 patent itself notes that “[m]any different proven methods for creating and organizing such a hierarchical tree structure are available to one skilled in the art[.]” Ex.1001, 4:45-51. The approach described by Huttenlocher is one example of these known methods of creating and organizing a mathematical tree structure in the context of image processing. *See* Pet., 41-42 (citing Ex.1006, 373-374, Figs. 3-4; Ex.1003, ¶¶107-108). Based on Huttenlocher’s explicit description of storing the interrelationships of edge segments in a “scale-space segment tree,” Huttenlocher expressly teaches “storing interrelationships of the plurality of edge segments in a mathematical tree structure,” even under Patent Owner’s narrow construction.

II. The prior art teaches a “*potential destination*” as claimed.

A. Patent Owner's unduly narrow interpretation of “*potential destination*” is not supported by the claims or specification of the '805 patent and contradicts Patent Owner's infringement contentions.

Patent Owner argues the term “*potential destination*” should be limited to “a physically fixed and contextually relevant location in the vehicle's surrounding environment—such as a docking station, cargo bay, or parking spot—that is automatically identified from image data based on geometric features and spatial parameters” and excludes “arbitrary or transient objects like moving vehicles.” POPR, 8. Patent Owner's position is not supported by the '805 patent and contradicts Patent Owner's assertions in the related district court litigation. Patent Owner has not identified any disclosure in the '805 patent to support its contention that “*potential destination*” “**cannot encompass** arbitrary or transient objects like moving vehicles.” POPR, 8. There is no such disclosure.

Claim 1 recites “*at least one potential destination relative to the motor vehicle*” without any limitation as to the type of destination. Ex.1001, 7:57-8:23. There is nothing in the claims requiring the destination to be fixed or stationary. *Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004) (“[I]t is important not to import into a claim limitations that are not part of the claim.”). The language of claim 1 also indicates that the “*potential destination*” is not limited to a stationary object because “*image data*” is “*acquired...using an*

imaging sensor from a surrounding field of the motor vehicle,” and the “*potential destination*” is “*extract[ed] from the acquired image data.*” Ex.1001, 7:59-63.

While the specification of the '805 patent provides an example of “maneuvering trucks toward docking stations,” the claims are not limited to this embodiment. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (“Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope....”). Further, the '805 patent is not limited to stationary objects such as docking stations. For example, the '805 patent describes “camera-based position detection and **lane control system[s] for motor vehicles.**” Ex.1001, 1:50-54 (discussing DE 10323915.4). Consistent with the '805 patent's discussion of lane control, Patent Owner asserts in the related district court litigation that the “*potential destination*” in claim 1 covers Tesla's Autosteer and Auto Lane Change features. Ex.1016, 10. Patent Owner argues that Autosteer “**maintains ... a set following distance (if there is a vehicle in front of you)**” and “**detects** lane markings, road edges, and **the presence of vehicles and objects to intelligently keep [the vehicle] in its driving lane**” and that “Auto Lane Change **moves [the vehicle] into the adjacent lane**” Ex.1016, 10. Patent Owner's infringement contentions directly contradict Patent Owner's argument in this IPR that “*potential destinations*” are limited to “stationary, geometrically identifiable endpoints.”

POPR, 8. In the context of Autosteer and Auto Lane Change—just like platooning—the destination of the motor vehicle is not a fixed location or endpoint and changes over time. Patent Owner's contradictory and irreconcilable positions make clear that Patent Owner is attempting to avoid the prior art in this IPR through an overly narrow claim construction but assert a broad construction in litigation.

B. The prior art identifies a “*potential destination*” in the same manner as the '805 patent by automatically identifying from image data a location in the vehicle's surrounding environment.

The Petition shows how the prior art teaches “the location of a preceding vehicle is a *potential destination relative to the motor vehicle*” in a manner “consistent with how the '805 patent uses the term ‘destination,’ referring to a destination as an object (e.g., cargo door of a dock).” Pet., 31 (citing Ex.1005, 174; Ex.1001, 7:25-31, 7:50; Ex.1003, ¶ 88); *see also* Ex.1001, 7:37 (“**a potential destination object**”). The Petition explains how the “location of preceding vehicle in a platoon” is “a potential destination of the [following] motor vehicle” because it is a location where the following motor vehicle is potentially going and is identified in the manner required by the claims of the '805 patent. Pet. 28-32. Like the cargo door example, a motor vehicle in the platoon of the prior art will automatically drive toward the location of the preceding vehicle but will not run into the preceding vehicle. The prior art identifies and operates with respect to a “*potential destination*” in the same manner as the '805 patent.

Petitioner's Authorized Reply to Patent Owner's Preliminary Response
IPR2025-00342 (U.S. Patent 7,336,805)

Respectfully submitted,

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PETITIONER’S EXHIBIT LIST

Ex.1001	U.S. Pat. No. 7,336,805 to Gehring et al. (“the ’805 patent”)
Ex.1002	Prosecution History of U.S. Pat. No. 7,336,805 (U.S. Application No. 11/154,772) (“the ’772 application”)
Ex.1003	Declaration of Dr. Jeffrey Rodriguez under 37 C.F.R. § 1.68
Ex.1004	<i>Curriculum Vitae</i> of Dr. Jeffrey Rodriguez
Ex.1005	“Visual Perception of Obstacles and Vehicles for Platooning,” Broggi et al. (“Broggi”)
Ex.1006	“Object Recognition Using Alignment,” Daniel Huttenlocher (“Huttenlocher”)
Ex.1007	U.S. Patent No. 5,434,927 to Brady et al. (“Brady”)
Ex.1008	“Automatic Vehicle Guidance: The Experience of the ARGO Autonomous Vehicle,” Broggi, Bertozzi, et al. (“Bertozzi”)
Ex.1009	Microsoft Computer Dictionary, 3rd ed., 1997, excerpts
Ex.1010	IV’s Complaint, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , No. 6:24-cv-188-ADA (WDTX)
Ex.1011	Proposed Scheduling Order, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , No. 6:24-cv-188-ADA (WDTX)
Ex.1012	Statistics on District Court Timing
Ex.1013	Interim Procedure for Discretionary Denials in AIA Parallel District Court Litigation, June 21, 2022
Ex.1014	IV’s Preliminary Infringement Contentions, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , No. 6:24-cv-188-ADA (WDTX)
Ex.1015	Declaration of Sylvia Hall-Ellis, Ph.D.
Ex.1016 (NEW)	Exhibit 1 to Intellectual Ventures II LLC’s Preliminary Infringement Contentions – Infringement Claim Chart of U.S. Patent No. 7,336,805 (the “’805 Patent”), <i>Intellectual Ventures</i>

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IPR2025-00342 (U.S. Patent 7,336,805)

	<i>II, LLC v. Tesla, Inc., No. 6:24-cv-188-ADA (WDTX)</i>
Ex.1017- Ex.1052	<i>Reserved</i>
Ex.1053	Statistics on District Court Timing (Dec. 31, 2024)
Ex.1054	WDTX 2024 Statistical Public Report, available at https://www.txwd.uscourts.gov/court-information/district-statistics/
Ex.1055	Amended Order Assigning the Business of the Court (Judge Moses, Jan. 31, 2025)
Ex.1056	LexMachina docket report
Ex.1057	LexMachina docket report
Ex.1058	“Albright Worried Multipatent Trials Ask Too Much Of Jurors,” Law360 (Dec. 18, 2020), at https://www.law360.com/articles/1337976/albright-worriedmultipatent-trials-ask-too-much-of-jurors
Ex.1059	Bifurcation Order – Videolabs, Inc. v. Asustek Computer, Inc. 6:22-cv-00720-ADA (WDTX)
Ex.1060	Joint Claim Construction Statement, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , 1:24-cv-884-ADA, ECF No. 37 (WDTX) (March 28, 2025)
Ex.1061	“The economic contributions of Tesla to the California economy, 2018–2021,” IHS Markit (Oct. 2022), available at https://digitalassets.tesla.com/tesla-contents/image/upload/Tesla-California-Economic-Impact-Final-Report-October-2022
Ex.1062	“Tesla’s ‘American-made’ cars won’t get hit as hard by the auto tariffs,” CNN.com, https://www.cnn.com/2025/03/29/cars/american-made-cars-tesla-auto-tariffs/index.html , retrieved Apr. 14, 2025

Petitioner’s Authorized Reply to Patent Owner’s Preliminary Response
IPR2025-00342 (U.S. Patent 7,336,805)

Ex.1063	“An Assessment of the Impact of the Inter Partes Review Process under the Patent Trial and Appeal Board on the US Economy,” The Perryman Group, available at https://www.perrymangroup.com/publications/report/2021/9/23/an-assessment-of-the-potential-impact-of-expanding-inter-partes-review-ipr-under-the-america-invents-act-on-the-us-economy/
Ex.1064	’805 Patent Assignment Recordation
Ex.1065	“Tesla’s California Footprint,” https://www.tesla.com/blog/teslas-california-footprint (retrieved Apr. 25, 2025)
Ex.1066	“FAQs for Interim Processes for PTAB Workload Management,” available at https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management (retrieved May 13, 2025).
Ex.1067	Notice of <i>Sotera</i> Plus Stipulation for Defendant Tesla, Inc., <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , 1:24-cv-884-ADA, ECF No. 63 (WDTX) (June 11, 2025)
Ex.1068	Order Granting Motion to Extend Time to File Infringement Contentions, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , 1:24-cv-884-ADA, ECF No. 60 (WDTX) (May 27, 2025)
Ex.1069	Judge Albright Patent FAQ, available at https://www.txwd.uscourts.gov/for-attorneys/judge-albright-courtroom-faq/ (retrieved June 2, 2025)

CERTIFICATE OF SERVICE

The undersigned certifies, under 37 C.F.R. § 42.6, that service was made on the Patent Owner as detailed below.

Date of service July 2, 2025

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Documents served **Petitioner's Authorized Reply to Patent Owner's Preliminary Response; Exhibit 1016.**

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