

**UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD**

**TESLA, INC.,
Petitioner**

v.

**iQAR INC.,
Patent Owner**

U.S. Patent No. 10,829,002 B2

Case No. IPR2024-00499

**PATENT OWNER'S HEARING DEMONSTRATIVES
May 8, 2025**

The '002 Patent Identified a Problem With the Prior Art

ment device described herein (in FIG. 1B). In FIG. 1A, a typical cruise control device regulates the speed of a vehicle as it drives from point A to point B when the vehicle speed is set to 50 mph. As the vehicle moves across different terrain (e.g., roads having different elevations), or through different weather conditions, the traditional cruise control device adjusts the power supplied to the vehicles (and thus the speed) based only on the set velocity and the actual velocity of the vehicle. Thus, the cruise control device

*Ex. 1001, '002 Patent at 6:53-61
(see also Paper 11, Response at 3)*

The '002 Patent's Inventive Solution

In FIG. 1B, the power management system receives external inputs, including information on the location and grade (e.g., steepness of any uphill/downhill portions) of the road, the distances traveled. The power management system also includes or deduces information about the route (e.g., from point A to point B), and the acceptable range of speeds that the vehicle may travel over this route (e.g., between 45 and 55 mph). The power management system may also receive information about the state of the vehicle, including the velocity at which it is traveling, and the weight of the vehicle. Finally, the power management system may include operational parameters such as the performance of the engine, aerodynamic performance, and rolling resistance of the vehicle. Given this information, the power management system may calculate applied power to the engine, and may derive a speed (or set of speeds) that optimizes the applied power. As shown in FIGS. 1A and 1B, the total energy used

The power management device may refer to a record of historical route information. For example, the power management device may include a memory or a data structure that holds information on routes or segments or routes that the vehicle has previously traveled. The memory may com-

*Ex. 1001, '002 Patent at 7:1-17, 17:31-35
(see also Paper 11, Response at 3-4)*

The '002 Patent – Claim 1

1. A power management device comprising:
 - a sensor interface configured to receive sensor data samples during operation of a vehicle;
 - a memory configured to store said sensor data samples for different points in time along a route segment traveled by said vehicle; and
 - a processor configured to (i) analyze said sensor data samples stored in said memory to detect a pattern and (ii) predict a destination of a driver in response to (a) said pattern and (b) historical data associated with operation of said vehicle, wherein (i) at least one of said sensor data samples is driver-related and (ii) at least one of said sensor data samples comprises telemetry data; and
- wherein the historical data comprises: data, regarding multiple route segments, gathered from the driver's operation of the vehicle on the multiple route segments during multiple trips; data, regarding multiple sequences of route segments, gathered from the driver's operation of the vehicle on the multiple sequences of route segments during the multiple trips; and data, regarding multiple travel destinations, gathered from the driver's operation of the vehicle to the multiple travel destinations during the multiple trips.

Ex. 1001, '002 Patent at Claim 1

The Petition's Grounds

Ground	Basis
Ground 1	Claims 1-16 purportedly obvious over Kudo 325 and Kudo 066
Ground 2	Claim 3 purportedly obvious over Kudo 325, Kudo 066, Bolger
Ground 3	Claim 17 purportedly obvious over Kudo 325, Kudo 066, Tryon

Paper 2, Petition at 1

The Prior Art Fails to Teach What the Claims Require

- ✗ Kudo 325 does not store (or use) ***“historical” “data ... regarding ... route segments”***
- ✗ The prior art does not teach dependent claims 2 and 3
- ✗ The prior art does not teach dependent claim 10

A “Route Segment” Is a Portion of a Route, Not Just an Individual Point

2. Segment Route

The route used by the power management device typically includes a starting position (e.g., the current position of the vehicle, which may be indicated by GPS), an ending position, as described above, and any intermediate positions between the initial and the final positions. In some variations, the route may be broken up into segments that may be used by a power management device to optimize the power needed to travel this segment. A segment may comprise any distance to be traveled, including the entire route, or small portions of the route. Different segments in the same route may be of different lengths.

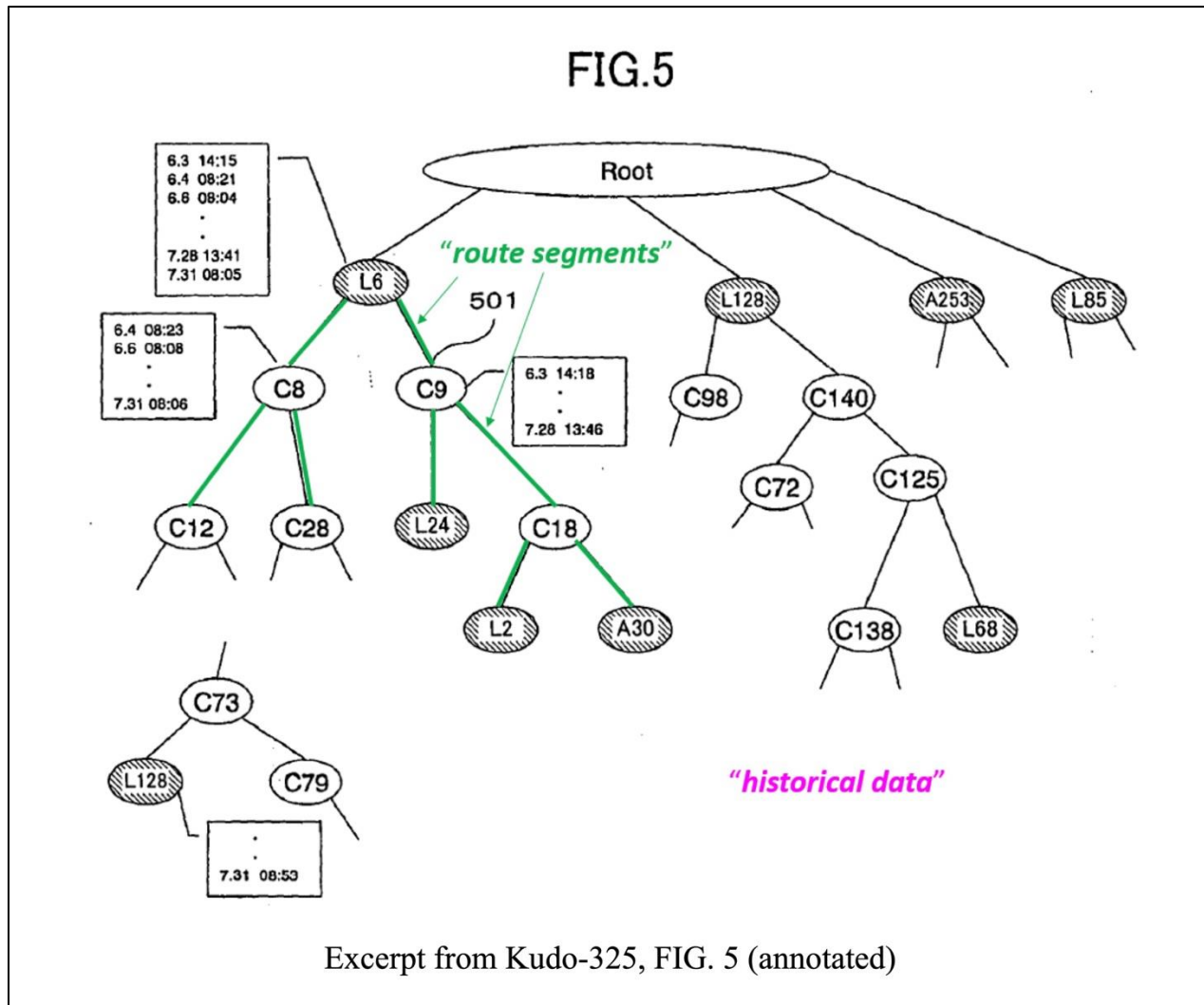
*Ex. 1001, '002 Patent, 13:64-14:8
(see also Paper 11, Response at 6-7)*

Petitioner Concedes That a “Segment” Is a Portion of a Route, Not Just a Point

Claims 1 and 11 describes a *route segment* traveled by a vehicle. The plain meaning of “segment” is “a separate piece of something.” *See* TESLA-1053 (citing TESLA-1055, 5). Thus, reference to *segment* in relation to *a route* means “a separate piece of a route.” *Id.* Further, the plain meaning of “route” is “a traveled way.” *Id.* (citing TESLA-1055, 4). As such, *route segment* traveled by a vehicle plainly means “a separate piece of a traveled way of a vehicle.” *Id.*

Paper 13, Reply at 3-4

Kudo 325 Stores Only Points, Not “Route Segments”



Kudo 325 Stores Only Points, Not “Route Segments”

[0093] FIG. 5 shows one example of the transition state information. The transition state information has a tree structure, as shown in FIG. 5, in such a fashion that: nodes (starting points) of a landmark or an area from which a travel starts are arranged at the uppermost level immediately below a root; histories of past node transition from the respective nodes as base points, which indicate histories of travels among intersections, are expressed in a tree structure; and nodes (destinations) such as a landmark, an area, and the like where the travel ends are located at the lowermost level of the respective branches. Each node, which accompanies state information indicating that the automobile departs from, passes through or arrives at the node (data indicated in rectangular areas in FIG. 5), can be retrieved through the tree structure under a condition such as “a node where the automobile travels in a period from 9 a.m. to 12 p.m. of weekday as a retrieval key. Also, the number of pieces of the accompanying state information offers to respective frequencies of departure from, passing through and arrival at the node. Thus, the transition state information contains information relating to the degree of transition, and this enables more efficient retrieval than retrieval of all the accumulate travel histories.

*Ex. 1004, Kudo 325, ¶ [0093]
(see also Paper 11, Response at 8-9)*

Kudo 325's Nodes Are Individual Points / Locations

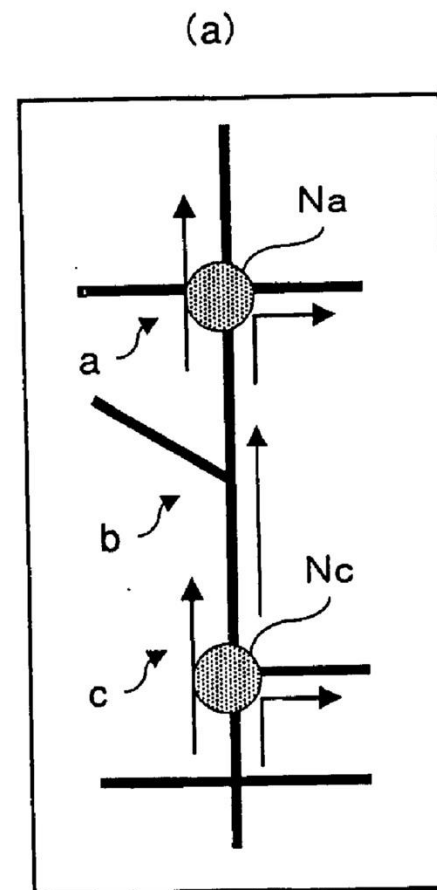
[0081] FIG. 2 indicates information relating to nodes stored in the map information DB 103. In the present embodiment, intersections, landmarks, area names, and the like are expressed by idea of node, and names unique to a user, such as “his/her office,” “Ms A’s house,” and the like can be registered in addition to proper names such as “XX intersection,” “YY Amusement Park,” and the like.

[0083] referring to, for example, an intersection and a landmark, each range may be a range within a 10-m radius of a representative point as a center; and referring to an area, each range may be a range within a 1-km radius of a representative point as a center. Further, the ranges of individual areas may be different from one another. The position information may be, for example, an address, rather than the latitude and longitude.

*Ex. 1004, Kudo 325, ¶¶ [0081], [0083]
(see also Paper 11, Response at 9)*

Kudo 325 Purposefully Ignores—and Does Not Store—the Path Travelled by the Vehicle

[0085] It is also noted that any nodes can be added and deleted according to user's travels. For example, it is possible that an intersection that the user's automobile has traveled in two or more directions may be set as a node. In detail, as shown in FIG. 30(a), the user has traveled in two directions through the intersections a and c, and accordingly, the intersections a and c are set as nodes Na and Nc, and the intersection b, through which the user has traveled in only one direction, is not set as a node.



Ex. 1004, Kudo 325, ¶ [0085], Fig. 30(a)
(see also Paper 11, Response at 11-12)

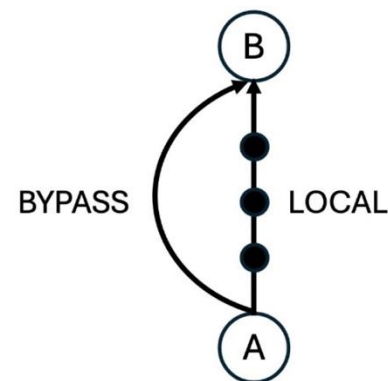
Kudo 325 Purposefully Ignores—and Does Not Store—the Path Travelled by the Vehicle

[0109] It is noted that the present embodiment selects only a node appearing with a frequency exceeding the predetermined value in generating the transition state information from the travel history, which is for increasing the retrieval efficiency by reducing the size of the data to be retrieved. In

*Ex. 1004, Kudo 325, ¶ [0109]
(see also Paper 11, Response at 13)*

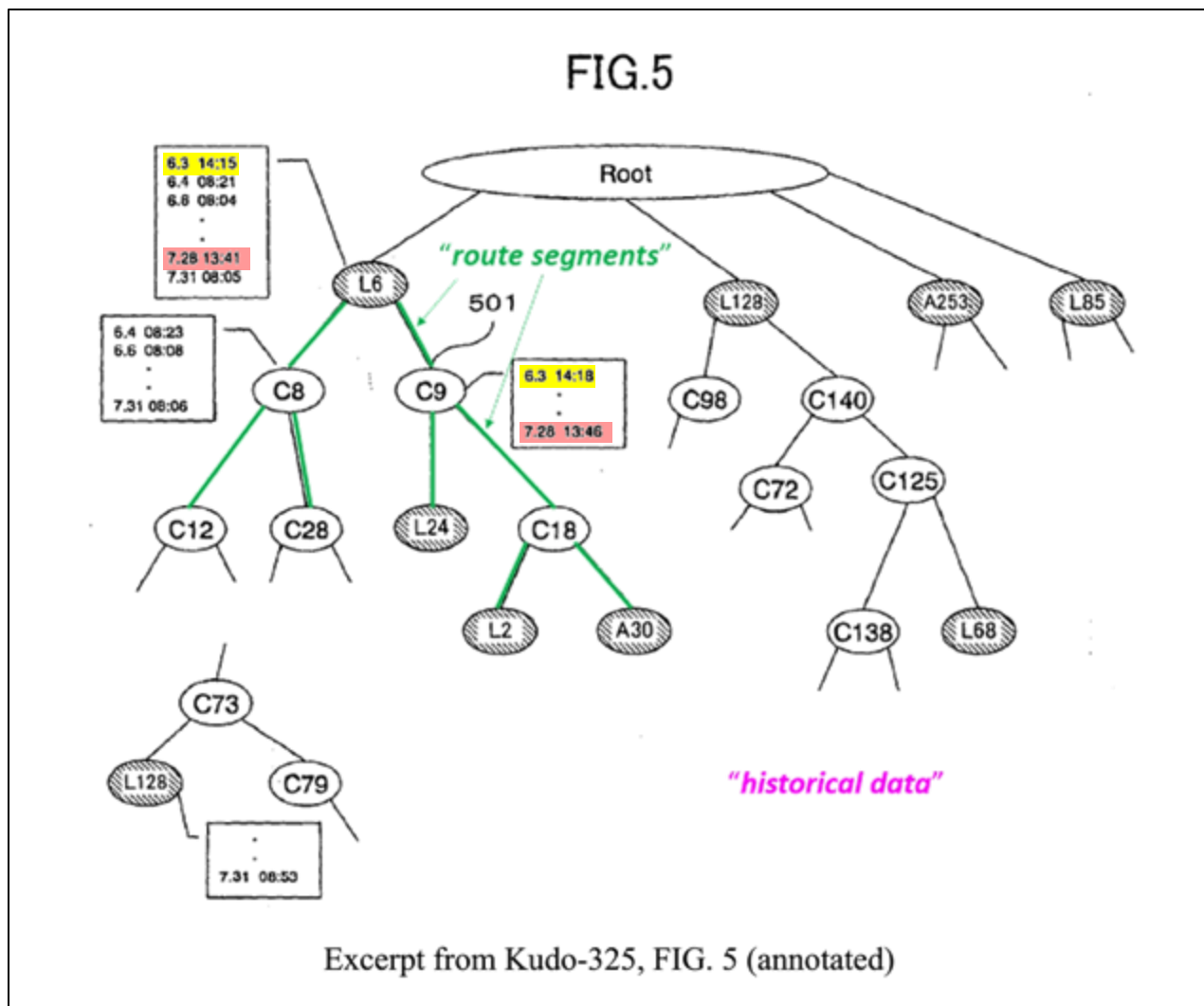
Kudo 325's Transition State Data Is Unable to Distinguish Different Routes Taken Between Two Points

114. In this scenario, Kudo 325 will only record nodes A and B in its transition state data. None of the intermediate intersections on the local route will be recorded as nodes because the vehicle never (or infrequently) turns at those intersections. Consequently, Kudo 325 will not differentiate between—and saves no information regarding—the actual route the vehicle traveled between intersections A and B. Only points A and B themselves are saved, along with the fact that the vehicle arrives at intersection B—via some unspecified and unknown route—after departing from intersection A. It is impossible to determine the route taken from this data. The data does not distinguish between travel over the bypass or local route. Instead, it only indicates that the vehicle traveled from point A to point B.



*Ex. 2001, Bevly Decl., ¶¶ 113-114
(see also Paper 11, Response at 13)*

Kudo 325 Stores Only Points, Not “Route Segments”



*Paper 2, Petition at 55
(see also Ex. 2001, Bevly Decl., ¶ 115)*

Petitioner Improperly Makes an Untimely New Argument in Reply Referring to Fundamentally Different Operation

Petition:

A node judgement section (yellow) references the map information database (green) to determine “whether the current position is a node or not.” *Id.*, [0090]; see FIG. 4. If so, “an ID number indicating the node is accumulated in the history accumulation DB [blue].” *Id.*, [0090]; see [0088], FIG. 4. A condition

FIG. 5, *infra*, illustrates “transition state information.” TESLA-1003, ¶137.

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TESLA-1004, [0093]. Information about these nodes (*e.g.*, node IDs, node transition sequences) corresponds to *historical data associated with operation of the vehicle* because this information reflects vehicle positions during past trips.

Reply:

not so limited. In the case where nodes are recorded in Kudo-325’s transition state information regardless of, *e.g.*, how often the driver passes through a node or which directions the driver traverses a node, no intersections would be “ignore[d],” as iQar contends. POR, 12. Instead, Kudo-325 encompasses the recordation of all intersections as nodes.

Paper 2, Petition at 7, 43-44; Paper 13, Reply at 7

The Prior Art Fails to Teach What the Claims Require

- ✗ Kudo 325 does not store (or use) *“historical” “data ... regarding ... route segments”*
- ✗ The prior art does not teach dependent claims 2 and 3
- ✗ The prior art does not teach dependent claim 10

Dependent Claims 2 and 3

2. The device according to claim 1, wherein said telemetry data comprises map coordinates determined in response to a GPS signal.

3. The device according to claim 1, wherein said telemetry data comprises map coordinates determined by a map service.

*Ex. 1001, '002 Patent, claims 2, 3
(see also Paper 11, Response at 34)*

Kudo 325 Stores Nodes, Not “Map Coordinates”

[0090] When the current position of the car navigation system is detected in the position detection section 101 (step a1), the node judgment section 102 performs judgment as to whether the current position is a node or not by referencing the map information DB 103 (step a2). If the node judgment section 102 judges the current position to be a node, an ID number indicating the node is accumulated in the history accumulation DB 104 (step a3). At this time, collateral information on time, date, weather, and the like is accumulated in combination.

[0081] FIG. 2 indicates information relating to nodes stored in the map information DB 103. In the present embodiment, intersections, landmarks, area names, and the like are expressed by idea of node, and names unique to a user, such as “his/her office,” “Ms A’s house,” and the like can be registered in addition to proper names such as “XX intersection,” “YY Amusement Park,” and the like.

[0083] referring to, for example, an intersection and a landmark, each range may be a range within a 10-m radius of a representative point as a center; and referring to an area, each range may be a range within a 1-km radius of a representative point as a center. Further, the ranges of individual areas may be different from one another. The position information may be, for example, an address, rather than the latitude and longitude.

*Ex. 1004, Kudo 325, ¶¶ [0081], [0083], [0090]
(see also Paper 11, Response at 17-18)*

The Prior Art Fails to Teach What the Claims Require

- ✗ Kudo 325 does not store (or use) *“historical” “data ... regarding ... route segments”*
- ✗ The prior art does not teach dependent claims 2 and 3
- ✗ The prior art does not teach dependent claim 10

Dependent Claim 10

8. The device according to claim 1, wherein said device is further configured to transmit said predicted destination to a remote database.

10. The device according to claim 8, wherein said remote database is configured to (i) receive said sensor data samples and store said sensor data samples as said historical data and (ii) present said historical data to said device.

*Ex. 1001, '002 Patent, claims 8, 10
(see also Paper 11, Response at 18)*

Kudo 325 Does Not Transmit Both a Predicted Destination and Historical Data to a Server

[0108] In the latter case, it is further possible that the history information accumulated in the history DB 104 is uploaded to the server for allowing the server to perform both prediction of a travel destination and selection of information based on the prediction result. Wherein, it is expected that some users are reluctant to upload all of their travel histories to the server in view of privacy protection. For such users, it is rational to upload least information, that is, only the predicted travel destination. In other words, all the travel histories may be uploaded to the server only for a user who provides permission.

*Ex. 1004, Kudo 325, ¶ [0108]
(see also Paper 11, Response at 19)*