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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GENERAL MOTORS LLC

Petitioner

v.

EDWARD H. NORTRUP

Patent Owner

Case IPR2023-00994

Patent 10,444,028

PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I. INTRODUCTION 1

II. FACTS CONFIRMED DURING DEPOSITION 4

 A. The User Has No Ability to Control the Cellular Network’s Collection of
 a Cellphone’s Location Data in *Feldman*.....4

 B. The Cellphones in *Feldman* Have No Ability to Self-Report Their
 Location. 8

 C. There is no Disclosure in *Feldman* that the Cellphones Operate as
 Navigation Devices. 9

III. ARGUMENT.....10

 A. A POSITA Would not Modify *Feldman* with User-Initiated Permissions
 to Selectively Enable or Disable Access to Cellphone Location Data.....10

 B. Modifying *Feldman* to Use Cellphones to Collect Location Data Would
 Contravene the Invention of *Feldman* and Destroy Its Principle of
 Operation. 12

 C. Modifying *Feldman* to Specialize the Cellphone to Collect and Transmit
 Location Data Would Contravene an Objective of *Feldman*, and, Thus,
 There Can Be No Motivation to Do So. 14

IV. *SIMSKE* IS NOT PRIOR ART UNDER 35 U.S.C. § 311(B).....17

V. CONCLUSION.....18

TABLE OF AUTHORITIES

Cases:

Page(s):

<i>In re Cronyn</i> , 890 F.2d 1158 (Fed. Cir. 1989)	18
<i>In re Klopfenstein</i> , 380 F.3d 1345 (Fed. Cir. 2004)	18

Rules, Statutes and Regulations:

35 U.S.C. § 311(b)	4, 17, 18
37 C.F.R. § 42.120	1

TABLE OF EXHIBITS

Exhibit	Description and Short Name
Ex. 2001	Deposition of Dr. Braasch, February 1, 2024 (“Braasch Depo.”)
Ex. 2002	Opening Brief of Appellant Lynk Labs, Inc., filed in <i>Lynk Labs Inc. v. Samsung Electronics Co.</i> , App. No. 2023-2346

Pursuant to 37 C.F.R. § 42.120, Patent Owner Edward H. Nortrup (“Nortrup” or “Patent Owner”), submits this Response to Petitioner General Motors LLC’s (“Petitioner”) Petition seeking *inter partes* review of Claims 1-31 of U.S. Patent No. 10,444,028 (Ex. 1001, the “’028 Patent”). As discussed in detail below, Petitioner has failed to meet its burden of proving that any of the challenged claims of the ’028 Patent (Claims 1-31 of the ’028 Patent, the “Challenged Claims”) are unpatentable. Accordingly, Patent Owner respectfully requests that the Patent Trial and Appeal Board (“Board”) issue a final written decision in favor of the Patent Owner on all grounds.

I. INTRODUCTION

Patent Owner previously submitted a Preliminary Response (Paper No. 8, the “POPR”) that sets forth a number of arguments as to why the combination of Petitioner’s primary references, U.S. Patent Pub. No. 2003/0055542 to Knockeart *et al.* (Ex. 1004, “*Knockeart*”) and U.S. Patent Pub. No. 2002/0026278 to Feldman *et al.* (Ex. 1005, “*Feldman*”), do not render the Challenged Claims obvious. These arguments were rejected by the Board in the Institution Decision (Paper No. 9) that followed.

In this Response, Patent Owner sets forth additional arguments as to why a POSITA would not find the Challenged Claims obvious in light of *Knockeart* and *Feldman*.

First, in *Feldman*, location data of the cellphone is collected and managed by the network and not by the cellphones themselves. To be clear, the cellphones collect no location data. Instead, the cellular network determines movement of cellphones by analyzing the standard communication signals that are used to maintain a connection between the cellphones and the network. The cellular network tracks a cellphone by determining the base stations to which the cellphone is attached and monitoring handovers of the cellphone from one base station to another. *Feldman*'s cellphones do not "self-report" their own location (e.g., transmit their self-determined GPS coordinates to the network) nor are they capable of doing so.

Since the cellphones of *Feldman* have no location data, they have no location data to report. Accordingly, a POSITA would not have implemented *Knockeart*'s scheme of allowing a user of an in-car navigation system to choose whether to report the car's GPS coordinates to the network on *Feldman*'s cellphones because there is no location data in *Feldman*'s cellphones to report. In other words, modifying the cellphones of *Feldman* to "selectively enable or disable access to user cellphone location data" would be nonsensical in the absence of such location data on the cellphone.

Second, modifying *Feldman* to use cellphones to collect location data would contravene the invention of *Feldman* and destroy its principle of operation. *Feldman*

describes in detail and emphasizes the utility of its method of tracking the location of cellphones using the handovers themselves as “footprints” or “footsteps.” This approach is, therefore, an important aspect of the invention and critical to the principle of operation of *Feldman*. Discarding this approach and using instead cellphones with their own location data collecting mechanism (e.g., a GPS receiver) would contravene the invention of *Feldman* and destroy its principle of operation. Thus, there can be no motivation to do so.

In addition, an objective in *Feldman* is avoiding the use of limited data from specialized devices. *Feldman* makes clear that it does not want to limit the collection of location data to “specialized” electronic devices that are capable of providing dynamic vehicle location and velocity data. Modifying *Feldman* to use specialized cellphones that collect and transmit location data would therefore be contrary to this objective of *Feldman*. Specifically, at the time of the '028 Patent, cellphones with GPS receivers or other means of collecting location data were not commonplace, and, thus, the data available from such devices was limited. *Feldman* is explicit in using less precise but more readily available location data such as that derived from a cellular network’s tracking of cellphone handovers. Thus, there can be no motivation to modify *Feldman*’s cellphones to collect location data, and consequently, limit the overall data being collected.

Accordingly, Petitioner's sole challenge (Ground 1) to the single independent claim (Claim 1) fails and, as such, the remaining claims of the '028 Patent (i.e., Dependent Claims 2-31) are necessarily valid in light of Petitioner's failure to prove independent Claim 1 obvious.

Finally, Petitioner's invalidity allegations regarding Claims 7 and 8 involve U.S. Patent Pub. No. 2005/0096840 to Simske ("*Simske*"), in combination with *Knockeart* and *Feldman*. Petition at 47-50. *Simske* was filed prior to the priority date of the '028 Patent (February 5, 2004) but was not published until afterward in 2005. *Simske* also never issued into a U.S. patent. As such, *Simske* can only be used as a "printed publication" under 35 U.S.C. § 311(b) to challenge the '028 Patent. But since *Simske* was not published or has been shown to be otherwise publicly available until after the priority date of the '028 Patent, it cannot be a "printed publication." As such, this document cannot be properly used in an IPR to challenge Claims 7 and 8.

II. FACTS CONFIRMED DURING DEPOSITION

A. The User Has No Ability to Control the Cellular Network's Collection of a Cellphone's Location Data in *Feldman*.

Feldman describes how a cellular network operator can monitor control messages a cellphone exchanges with the network to determine movement of the cellphone.

Data acquisition from cellular phones is controlled by a server connected to a particular cellular phone network. The operation of cellular phones provokes a large amount of administrative and control messages that flow in the cellular phone network whenever any cellular event occurs. For example, initiation of a call, completion of a call, transmission of a short message service (SMS) message, a cell transition or handover, etc. The server of the cellular phone network monitors these messages and intercepts those that indicate ‘movement’ of cellular phone holders, for example, phones whose cell handovers rate can point to a vehicle speed.

Feldman at [0060]. The concept of tracking a cellphone based on its handovers is simple – the operator of a cellular network knows the geographic locations of its base stations and movement of the cellphone can be inferred by analyzing the location of the base station the cellphone is disconnecting from and the location of the new base station to which the cellphone is connecting as part of the handover. Further, the rate at which these handovers occur can indicate the speed at which the cellphone is moving.

For example, if a user’s cellphone is being handed over to a new base station that is located north of the old base station the cellphone is currently connected to, one can infer that the cellphone is currently in the vicinity of the old base station and is moving north into the range of the new base station. This inference is based on the premises that the base station’s signals become weaker as a function of the

distance a cellphone is from the base station and that a cellphone will typically connect to the particular base station with the strongest signal, as that signal is measured by the phone.

Petitioner's expert, Dr. Michael Braasch, confirmed this understanding of *Feldman*.

Q. . . . [h]ow would the sending of an SMS message, for example, indicate movement as discussed there in paragraph 60 of *Feldman*?

A. It's in the same way as -- as voice communication, whether it's -- whether it's voice or whether it's data. There's still a serving -- I'm sorry -- serving base station. And -- and for the -- as we discussed earlier, as the phone is moving, then it'll be handed off from base station to base station regardless of whether there's a voice call or there's data being transmitted. It's all -- it all has to be going through whatever the current serving base station is.

Q. So it's -- the way movement would be determined would be looking at which base station the phone is communicating with at a particular time and how the serving base station may change over time. That would indicate some sort of movement. Is that what you're saying, Dr. Braasch?

A. I'm saying that as the -- in this -- in this particular disclosure in paragraph 60 [of *Feldman*], what's being discussed is as the -- as the phone is moving and there's a handover from base station to base station as the -- as the phone is moving through the cells, then that --

that handoff -- the rate of that handoff would give an indication of movement.

Q. If a phone is communicating with -- with a -- just a particular serving base station - so the phone is not being handed off, but say maybe I'm driving in concentric circles around a particular base station and not changing the base station I'm communicating with -- is there any way - and it's discussed in paragraph 60 [] of Feldman - for the network to determine that the phone is moving?

A. The particular disclosure in 60 is only referring to detection of movement by base station hand overs. And so in the example that you have just described, where a phone is moving but it's staying in -- in one particular cell and near one particular base station, then this particular disclosure in *Feldman* would -- would not indicate any movements if there was no handover.

Deposition of Dr. Braasch, February 1, 2024, Ex. 2001 ("Braasch Depo."), p. 27, ln. 16 – p. 27, ln. 6.

The user of a cellphone has no control over the phone's sending of control messages or the handover process as described in paragraph 60 of *Feldman*. That process is solely under the control of the cellphone and cellular network. Dr. Braasch also confirmed this understanding.

Q. And with respect to some of these messages described in paragraph 60 -- and I'm looking at -- let's. Cell handover, I believe there's mention of control messages. Would the -- the operator, whoever

possesses the phone, the owner of phone, can they control the phone sending and receiving of control messages to and from the cellular network?

A. Only insofar as they could stop it by turning the phone off. But in terms of the actual protocol of the way the phone is interacting with the base stations, I don't believe -- off the top of my head here, I don't believe the user has -- has control over those control messages.

Braasch Depo., p. 32, lns. 8-20.

In sum, the user of one of *Feldman*'s cellphones, as disclosed in *Feldman*, has no ability to control the cellular network's tracking of the cellphone, short of powering off the phone.

B. The Cellphones in *Feldman* Have No Ability to Self-Report Their Location.

There is no disclosure in *Feldman* about its cellphones having the ability to affirmatively self-report their own position, such as by taking a reading of a GPS receiver inside of the phone and transmitting the coordinates to some other entity.

Dr. Braasch was asked specifically about this topic.

Q. And earlier you mentioned that you believe that the cell phones being discussed in *Feldman* did have some GPS capability. Can you point me to the portion of *Feldman* that describes a cell phone reporting its GPS position to the cellular network?

A. . . . At the moment I'm not finding a particular disclosure that specifically recites what you're talking about. . . .

Braasch Depo., p. 37, ln. 23-p. 38, ln. 5 (noting that Dr. Braasch's answer goes on with various non-responsive statements regarding the question asked).

C. There is no Disclosure in *Feldman* that the Cellphones Operate as Navigation Devices.

The cellphones in *Feldman* are never disclosed as being able to operate as navigation devices themselves. *Feldman*'s phones can be tracked by the cellular network to generate certain traffic-related information. But there is no disclosure that *Feldman*'s cellphones consume this data to provide navigation services. Again, Dr. Braasch was questioned about this topic.

Q. . . . where is the disclosure in Feldman that that data or that information is provided to the phone and that the phone can perform navigation functions? I would note, Dr. Braasch, that paragraph 65 talks about these processing steps, which refers to previous processing steps take place in a server that's connected to the mobile sensor network.

A. . . . Sitting here at this moment, I am not finding a specific reference that I can point to. . . .

Braasch Depo, p. 34., ln. 20 – p. 35, ln. 3. This point is relevant to Petitioner's repeated argument that *Feldman*'s cellphones can serve as navigation devices themselves. *See, e.g.*, Petition at 14.A

III. ARGUMENT

A. A POSITA Would not Modify *Feldman* with User-Initiated Permissions to Selectively Enable or Disable Access to Cellphone Location Data.

A POSITA would not have found the portion of Challenged Claim 1 that requires a cellphone to have “a user initiated permission set comprised of a list of authorizations that permit a user to selectively enable or disable access to user cellphone location data” obvious in light of *Knockeart*’s ability to enable/disable its data collection modes and *Feldman*’s phones. *Knockeart*’s data collection modes involve an in-car navigation system utilizing its GPS receiver to determine the car’s location. *Knockeart* at [0322] and [0337]. Once this location data is recorded, it can be sent to the network by the in-car navigation system. *Id.* at [0323] and [0338]. It is this collecting and reporting that can be enabled and disabled. *Id.* at [0324].

A POSITA would not combine this functionality with *Feldman*’s cellphones because *Feldman*’s phones do not themselves collect, report, or control any location information. Thus, there is no collection or transmission of location information in *Feldman*’s phones to be enabled or disabled. As discussed above, the only location information derived from *Feldman*’s phones is based on handovers and control messages and is managed by the network and not the cellphone. *Feldman* at [0060]. The generation of this information is inherent for a cellular phone to function in a

cellular network and cannot be controlled by the user of the phone except by turning the phone off.

Stated differently, a POSITA would appreciate that *Feldman*'s cellphones do not have any way of determining their own location and cannot control the exchange of the basic control signals exchanged with the cellular network. As such, a feature that would allow a user of a *Feldman* cellphone to optionally allow or prevent transmission of the phone's self-determined location has no place in one of *Feldman*'s phones - it would be pointless because *Feldman*'s phone cannot generate or provide such information.

Yet, this is exactly what Petitioner alleges – “A POSITA would have recognized from this disclosure [the enable/disable feature] that *Knockeart* provides that each **cell phone** in the *Knockeart-Feldman* combination has a user-initiated permission set comprised of a list of authorizations that permit a user to selectively enable or disable access **to user cellphone location data**. Petition at 23-24, emphasis added (noting that the only relevant cellphones in the *Knockeart-Feldman* combination are found in *Feldman*). As stated above, however, a POSITA would understand that allowing a user to “selectively enable or disable access to user cellphone location data” would be nonsensical in the absence of such location data on a cellphone.

B. Modifying *Feldman* to Use Cellphones to Collect Location Data Would Contravene the Invention of *Feldman* and Destroy Its Principle of Operation.

Petitioner has not argued that it would be obvious for cellphones in *Feldman* to collect and transmit location data. Petitioner presents no *Graham* analysis in its Petition identifying the lack of *Feldman*'s cellphone's ability to collect and transmit location data and then claiming that this ability would be obvious in light of some other reference. Instead, Petitioner erroneously claims that the cellphones of *Feldman* do contain such location data and are capable of transmitting such data. Petitioner is therefore precluded from making such argument now.

Setting aside that Petitioner has not and cannot now make such an argument, there is no basis for such an argument even if Petitioner wants to make one. This type of argument would be contrary to the invention and the principle of operation of *Feldman*. A main aspect of *Feldman*'s invention is using network level data to determine traffic patterns even though such data is not as accurate as GPS-derived location data. For example, *Feldman* states:

Another main aspect of the present invention relates to the modeling and processing of vehicular traffic data and information which are acquired, collected, or gathered, using techniques based on mobile wireless communication networks or systems, such as cellular telephone types of networks and systems, which to date, feature relatively low accuracy and precision of vehicle locations compared to the less widely used, but significantly more highly accurate and precise,

GPS types of mobile wireless communication or electronic vehicular tracking technologies.

Feldman at [0034]. Thus, *Feldman* recognizes the benefit of acquiring and analyzing traffic data at a cellular network level even though it is not as accurate as GPS.

Feldman also touts the benefits of gathering location data at the cellular network level and dedicates a substantial portion of its disclosure to describing how the cellular network collects this data. For example, *Feldman* states:

In principle, method / system 10 of the present invention is applicable to all types of mobile sensor systems, and models and processes the variability of location accuracy, vehicular traffic movement data and information, reading time intervals, and other types of vehicular traffic data and information as further described below.

Feldman at [0054]. *Feldman* continues:

Data acquisition from cellular phones is controlled by a server connected to a particular cellular phone network. The operation of cellular phones provokes a large amount of administrative and control messages that flow in the cellular phone network whenever any cellular event occurs. . . . The server of the cellular phone network monitors these messages and intercepts those that indicate ‘movement’ of cellular phone holders, for example, phones whose cell handovers rate can point to a vehicle speed.

Those cellular phones that are suspected as being ‘vehicle-carried’ are immediately tracked for their locations using the handovers themselves as ‘footprints’ or ‘footsteps’, and/or other locating capability of the cellular phone network. Different particular cellular phone networks use different locating techniques and systems, each having a different characteristic locating accuracy. Method / system **10** is independent of specific locating techniques and systems, and is suited to a variability of accuracy and precision levels.

Feldman at [0060-61]. *Feldman* thus describes in detail and emphasizes the utility of its method of tracking the location of cellphones using the handovers themselves as “footprints” or “footsteps.” The *Feldman* approach of using cellular network level data collection to determine location of cellphones is, therefore, an important aspect of the invention and critical to the principle of operation of *Feldman*.

Discarding this approach and using instead cellphones with their own location data collecting mechanisms (e.g., GPS receivers), would contravene the invention of *Feldman* and destroy its principle of operation. Thus, there can be no motivation to do so.

C. Modifying *Feldman* to Specialize the Cellphone to Collect and Transmit Location Data Would Contravene an Objective of *Feldman*, and, Thus, There Can Be No Motivation to Do So.

As set forth above, the cellphones of *Feldman* do not collect and share location data and there is no motivation to modify them to do so. An objective in *Feldman*

is avoiding the use of limited data from specialized devices. Specifically, *Feldman* states:

It is noted, however, that due to the requirement of uniquely or specifically designating or assigning each mobile sensor or electronic device to a particular vehicle during the process of gathering, collecting, or acquiring, the vehicular traffic data and information, **the potential number of mobile sensors or electronic devices providing dynamic vehicle location and velocity data and information to the computerized central traffic data and information handling system is limited**, in proportion to the number of vehicles featuring the particular mobile wireless communication or electronic vehicular tracking technology. For example, currently, there is a significantly larger potential number of vehicles associated with cellular telephone types of a mobile wireless communication network or system compared to the potential number of vehicles associated with GPS types of a mobile wireless communication network or system.

Feldman at [009] (emphasis added). *Feldman* thus makes clear that it does not want to limit data to “specialized” electronic devices providing dynamic vehicle location and velocity data.

Modifying *Feldman* to use specialized cellphones that collect and transmit location data would therefore be contrary to this objective of *Feldman*. Specifically, at the time of the '028 Patent, cellphones capable of collecting and sharing location data were rare and not readily commercially available. For example, according to

GPS Evolution in Smartphones | How GPS Work in Smartphones | Use of GPS in Daily Life | What is GPS?, April 3, 2023¹:

GPS technology first became available in smartphones in the late 1990s, but it was not widely adopted until the early 2000s. One of the first smartphones to feature GPS technology was the Nokia 3600, which was released in 2002. However, the technology was still relatively new and not yet fully developed, so the GPS capabilities of early smartphones were limited.

Over the next few years, GPS technology continued to evolve and improve, and it became increasingly common for smartphones to feature GPS capabilities. In 2005, the first GPS-enabled smartphones running the Windows Mobile operating system were released. In 2007, the first iPhone was released, and it featured built-in GPS capabilities. This was a major milestone in the development of GPS technology, as the iPhone's popularity helped to drive widespread adoption of the technology in smartphones.

Therefore, at the time of the '028 Patent, cellphones with GPS or other means of collecting location data were not commonplace, and, thus, the data available from devices was limited. *Feldman* was explicit in avoiding such limited data. Thus,

¹ <https://www.linkedin.com/pulse/gps-evolution-smartphones-how-work-use-daily-life-what-ali-akbar/>

there can be no motivation for a POSITA to modify the cellphones of *Feldman* to collect location data and consequently limit the overall data being collected.

For these reasons, the combination of *Knockeart* with *Feldman* does not suggest a cellphone with the ability to enable/disable access to location data as required in Challenged Claim 1.

IV. ***SIMSKE* IS NOT PRIOR ART UNDER 35 U.S.C. § 311(B)**

Petitioner uses *Simske* as prior art in its challenge to Claims 7 and 8 in the Petition. Petition at 47-50. The only categories of prior art “documents” that can be used to challenge a patent in an IPR context are “patents” and “printed publications.” 35 U.S.C. § 311(b). *Simske* is simply a published patent application because *Simske*’s underlying application was abandoned before issuing into a U.S. patent. Thus, the only potential statutory category of prior art *Simske* can fall into is that of a “printed publication.”

Importantly for this analysis, however, *Simske* was published, and thereby made available to the public, on May 5, 2005 – over a year after the priority date of the ’028 Patent (February 5, 2004).

Based on these dates, *Simske* cannot be used as prior art against the ’028 Patent because it was not “publicly available” prior to the priority date of the ’028 Patent.

The statutory phrase “printed publication” has been interpreted to mean that before the [relevant] date the reference must have been sufficiently accessible to the public interested in the art; dissemination and public accessibility are the keys to the legal determination whether a prior art reference was “published.”

In re Klopfenstein, 380 F.3d 1345, 1348 n.2 (Fed. Cir. 2004) (quoting *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989)). Thus, since *Simske* is not prior art that can be used in this IPR proceeding under 35 U.S.C. § 311(b), Petitioner’s challenge to Claims 7 and 8, which depend, in part, on *Simske*, should be dismissed and the patentability of those Claims confirmed.

Patent Owner notes that this issue was raised in IPR2022-00149 and that in that case, the Board rejected the arguments Patent Owner makes above regarding the use of a previously filed but later published patent application as prior art in an IPR proceeding. Patent Owner further notes that this issue is currently on appeal to the Federal Circuit - *Lynk Labs Inc. v. Samsung Electronics Co.*, App. No. 2023-2346. Lynk Labs opening brief in that appeal (without the Appendix) is attached hereto as Exhibit 2002. Lynk Labs arguments in favor of the position taken by Patent Owner above are found on pages 58-66 of that brief.

V. CONCLUSION

For the foregoing reasons, Petitioner has failed to carry its burden of proving that the Challenged Claims are obvious over the cited combinations of references

and that *Simske* is prior art available to be used in this proceeding. Accordingly, Patent Owner respectfully requests a final written decision affirming the patentability of each of the Challenged Claims.

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(2) because it contains 4,139 words, excluding the parts of this Patent Owner's Response that are exempted by 37 C.F.R. § 42.24(a)(1), according to the word processing system used to prepare this Patent Owner's Response.

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CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of March, 2024, a copy of Patent Owner's Response has been served in its entirety via email on the following:

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