

General Motors LLC (Petitioner)
v.
Edward H. Nortrup (Patent Owner)
Petitioner Demonstratives

Case No. IPR2023-00994
U.S. Patent No. 10,444,028

Before Hon. Jeffrey S. Smith, Georgianna W. Braden, and Michelle N. Wormmeester
Administrative Patent Judges

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Petition's Challenges to Issued Claims

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Overview of the '028 Patent

Overview of the '028 Patent

FIG. 7 illustrates a location facility 700 according to the principles of the present invention. In an embodiment, a cell phone 710, or other transmitting device, is located through a triangulation system. For example, a user may be using their cell phone 710 and the triangulation system with cell towers 702A, 702B and 702C may locate and or track the position of the cell phone. The cell phone location may be mapped onto a roadway map to provide location, speed and or other travel information. In an embodiment, the cell phone 710 may be requested to make a transmission so the triangulation, or other locating system, can locate and or track the position of the cell phone or mapping on a roadway or route 704. The triangulation system may use a plurality of cell phone towers 702 and the plurality of towers may listen to a cell phone 710 transmissions 712. The transmissions 712 may be timed or power measured to determine the position of the cell phone.

Embodiments include methods and systems of determining traffic patterns. The methods and systems may include collecting a plurality of cell phone locations; and mapping the locations of the cell phone locations.

For example, a tracking facility may track traffic patterns and locate an abnormal traffic condition (e.g. an accident, construction, traffic congestion, or vehicles traveling a significantly slower rates than a speed limit or predicted speed) and a warning facility may be used to warn vehicles in close proximity to the abnormal traffic condition.

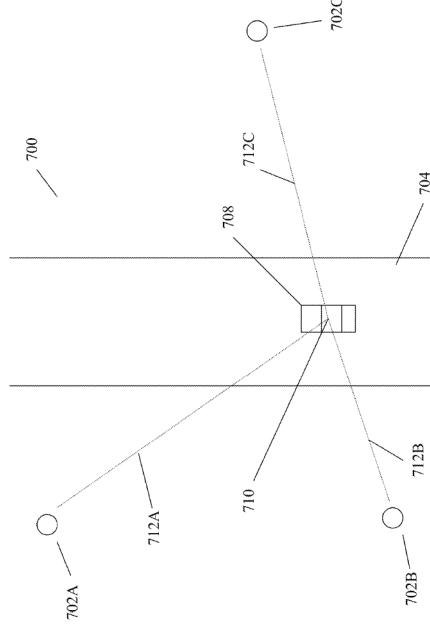


Fig. 7

Claim 1 of the '028 Patent

1. A computer program product that, when executing on one or more computers performs the steps of: automatically receiving a current location; and presenting a roadway map of an area proximate the current location, wherein the map includes at least one route from the current location to a destination based at least in part on a traffic condition, wherein the traffic condition is at least in part based on a plurality of cell phone speeds estimated through an assessment of multiple locations of each of a plurality of cell phones, wherein each of the plurality of cell phones further 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.

Amendment that Lead to Allowance

Claims 1-31 are allowed over cited prior art in light of the amendments and the Applicant's arguments of 4/15/2019.

1. (Currently Amended) A computer program product that, when executing on one or more computers performs the steps of:
automatically receiving a current location; and
presenting a roadway map of an area proximate the current location, wherein the map includes at least one route from the current location to a destination based at least in part on a traffic condition, wherein the traffic condition is at least in part based on a plurality of cell phone speeds estimated through an assessment of multiple locations of each of [[the]] a plurality of cell phones, wherein each of the plurality of cell phones further 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.

Overview of Knockeart

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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Knockeart's System

[0074] In-vehicle systems 105 are coupled to server system 125 by wireless communication links. In particular, in-vehicle systems 105 at times communicate with server system 125 over signal paths 110 using modulated data signals that are passed over a standard analog cellular telephone system (i.e., using the Advanced Mobile Phone Service (AMPS) standard). An in-vehicle system 105 typically operates in an autonomous mode after an initial exchange with server system 125. During the initial exchange, a starting location (or other location-related data), speed and heading, and a desired destination are uploaded from the in-vehicle system to the server system and then a planned route is downloaded from the server system to the in-vehicle system.

[0077] In some versions of the system, server system 125 also serves as a gateway to external information systems 130. These external systems provide information used by server system 125, or provide information that is passed directly to in-vehicle systems 105. For instance, an external information system 130 can provide traffic-related information that is used by server system 125 to determine a fastest route from a starting to a destination location.

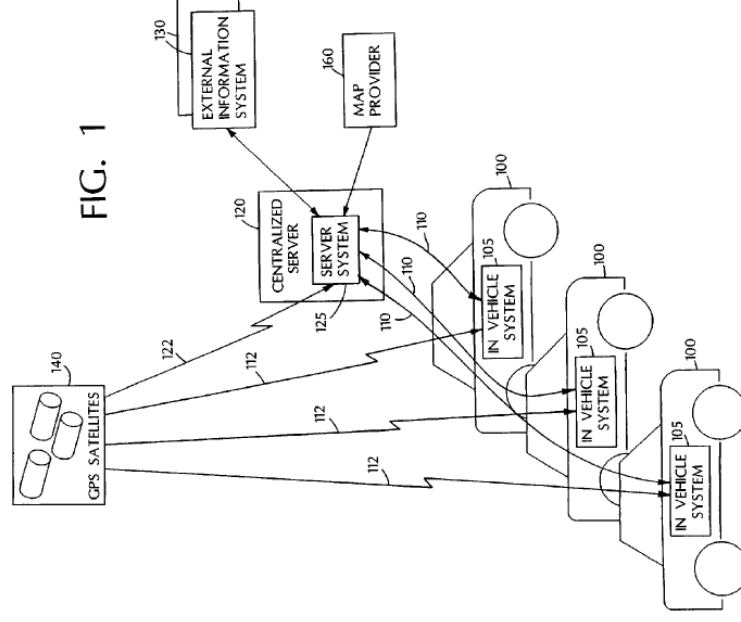


FIG. 1

Knockeart's System

[0120] Referring back to FIG. 2, I/O devices 240 also include a voice output device 246. Voice output device 246 provides audio output of speech commands that are stored or formed on onboard computer, for example, using compressed or concatenated waveforms or a speech synthesizer.

[0121] I/O devices 240 can be dedicated to onboard computer 210, or can alternatively be part of another vehicle component such as a radio. In the latter case, display 242 and input device 244 are the display and input buttons of the other component, respectively. Many audio components include standard control interfaces, such as the ACP (Audio Control Protocol) interface used in vehicles manufactured by the Ford Motor Company. In such a case, onboard computer 210 can communicate with the audio component using a standard communication interface. Voice output can be provided to the operator by passing it through the audio system, or alternatively, onboard computer 210 can mute or attenuate the audio system while voice output is provided through a dedicated audio path.

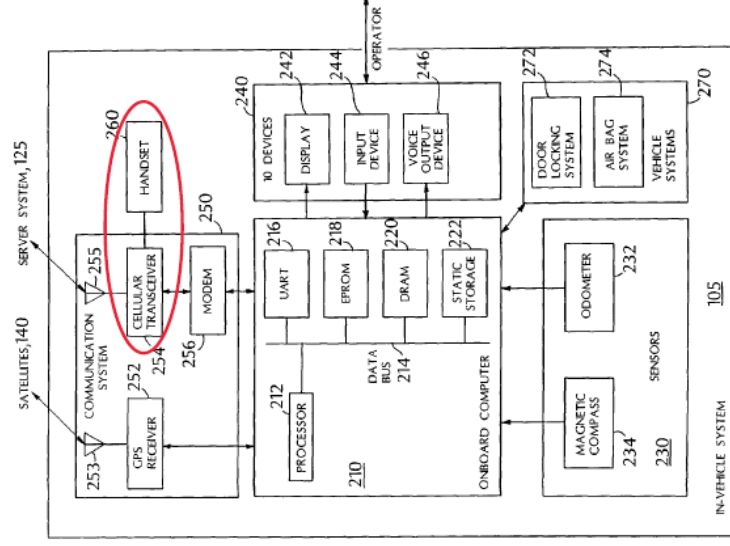


FIG. 2

Knockeart's System

[0170] Navigation application 512 also makes use of a traffic database 524. Information in traffic database 524 includes typical link speeds that it uses for route planning. The information comes from a combination of an external information system 130, such as from a government run traffic monitoring authority, and from logging data obtained from probe vehicles (see Section 3.5). If probe vehicles are used to collect traffic information, then traffic information can also be provided by the server system to the external traffic information system.

[0318] In addition to relying on an externally provided traffic information, server system 125 makes use of some or all vehicles 100 as "probes" for collecting traffic information. Navigation application 512 receives the traffic information from the probe vehicles and feeds the collected traffic information back into traffic database 524. In addition, the server system optionally sends updated traffic information to the external information system. In this way, the vehicle navigation system can be a source of traffic information in addition to, or instead of, being a consumer of traffic information from external information system 130.

[0319] Two modes of data collection are used.

[0324] The operator of the vehicle has the option of enabling or disabling either mode of data collection through the user interface of the in-vehicle system. Also, the server system can enable (or request) either type of collection. For instance, the server system can enable more vehicles if it needs more data, and disable data collection in some vehicles if it is receiving more data than it needs.

Overview of Feldman

Feldman's System

[0018] Thus, according to the present invention, there is provided a method and a system for modeling and processing vehicular traffic data and information, comprising: (a) transforming a spatial representation of a road network into a network of spatially interdependent and interrelated oriented road sections, for forming an oriented road section network; (b) acquiring a variety of the vehicular traffic data and information associated with the oriented road section network, from a variety of sources; (c) prioritizing, filtering, and controlling, the vehicular traffic data and information acquired from each of the variety of sources; (d) calculating a mean normalized travel time (NTT) value for each oriented road section of said oriented road section network using the prioritized, filtered, and controlled, vehicular traffic data and information associated with each source, for forming a partial current vehicular traffic situation picture associated with each source; (e) fusing the partial current traffic situation picture associated with each source, for generating a single complete current vehicular traffic situation picture associated with entire oriented road section network; (f) predicting a future complete vehicular traffic situation picture associated with the entire oriented road section network; and (g) using the current vehicular traffic situation picture and the future vehicular traffic situation picture for providing a variety of vehicular traffic related service applications to end users.

[0024] FIG. 3 is a pictorial diagram illustrating exemplary results obtained from the process of path identification using vehicular traffic data and information acquired from mobile sensors of a cellular phone mobile communication network, in accordance with the present invention;

[0008] For obtaining dynamic vehicle location and velocity data and information, having varying degrees of accuracy and precision, from uniquely or specifically dedicated in-vehicle mobile sensors or electronic devices, such prior art techniques make use of well known global positioning system (GPS) and/or other types of mobile wireless communication or electronic vehicular tracking technologies, such as cellular telephone or radio types of mobile wireless communications networks or systems, involving the use of corresponding mobile wireless devices such as cellular telephones, laptop computers, personal digital assistants (PDAs), transceivers, and other types of telemetric devices, which are uniquely or specifically designated or assigned to a particular vehicle.

Patent Owner's Substantive Arguments are Based
on an a Misreading of the Petition and Feldman

Patent Owner Ignores Clear Disclosure in the Record

Patent Owner's Assertions in the Sur-Reply:

Petitioner's Ground One argument has a fatal flaw. The argument is based on Petitioner's mistaken belief that Feldman discloses cell phones self-reporting location data. Feldman does not disclose this.

Thus, the Knockart-Feldman combination lacks disclosure of cell phones self-reporting location data or otherwise having control over the cellular phone networks collection,

Feldman does not disclose cell phones self-reporting their locations.

Because Feldman does not disclose cell phones self-reporting their locations or any way to control the networks messaging and calculations, elements related to cell phone location, location access control by the phone and transmission of location information, such as [1.4], [1.5] and [2], are not found in the combination of Knockart-Feldman.

Nowhere does Feldman disclose cell phones transmitting location data as part of its technique for collecting traffic information.

Feldman's technique for collecting traffic information does not involve cell phones self-reporting location data,

Nowhere does Feldman disclose of cell phones that self-report using GPS or other technology.

Patent Owner Ignores Feldman's Disclosure of Cellphones Self-Reporting Location Information

Feldman:

the present invention features mobile sensors as most advantageous for acquiring vehicular traffic data and information, even though they have lower confidence levels. A growing number of mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of transmitting vehicular locations to a computerized central data and information receiving and processing system. Such mobile wireless communication devices are telemetric devices with GPS capabilities, anti-theft devices, and, driver-carried devices such as computer laptops and cellular phones.

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GM-1005, [0053]; Pet., 8-9, 11-12, 22; Pet. Rep., 12, 14. 15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Dr. Braasch Describes What Feldman Reveals to a POSITA

Dr. Braasch:

Feldman makes clear that one of its sources of traffic information is GPS enabled cellphones “transmitting vehicular locations to” a central traffic server. GM-1005, [0053]; GM-1003, ¶89. Specifically, as I addressed in my initial declaration, Feldman states that “mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of *transmitting vehicular locations to a computerized central data and information receiving and processing system*.” GM-1005, [0053] (emphasis added). Feldman goes on to describe that “[s]uch mobile wireless communication devices” that include this ability for transmitting vehicular locations can be configured to include “GPS capabilities” and include devices such as “computer laptops and *cellular phones*.” *Id.* (emphasis added).

The Knockart-Feldman Combination

The Two Configurations for the Knockart-Feldman Combination

Petition:

Multiple reasons would have prompted a POSITA to beneficially apply the teachings of Feldman to Knockart to implement all or a portion of Knockart's in-vehicle systems as cellular phones for the purpose of collecting probe vehicle traffic data. GM-1003, ¶¶ 58-67. Alternatively or additionally, a POSITA would have been prompted to implement Knockart's system to utilize Feldman's vehicular traffic data collected by tracking "vehicle-carried" cellular telephones as one of the external traffic information sources expressly described in Knockart. GM-1005, [0007]-[0009], [0036], [0038], [0053], [0058]-[0062]; GM-1004, [0077], ("an external information system 130 can provide traffic-related information that is used by server system 125 to determine a fastest route from a starting to a destination location"),

Patent Owner Ignores Detailed Descriptions of the Knockeart-Feldman Combination

Petition:

In either case, the resulting system would have used Feldman's techniques for collecting traffic information using vehicle-carried cellular phones to populate Knockeart's traffic database used to determine fastest routes between starting points and destinations. *Id.*

Therefore, a POSITA would have recognized that it would have been beneficial to replace, enhance, or supplement at least some of the in-vehicle location tracking systems described by Knockeart with cell phone based location tracking (as taught by Feldman) because, as Feldman expressly recognizes, "there is a significantly larger potential number of vehicles associated with cellular telephone types of a mobile wireless communication network or system" therefore providing a greater number of potential probes for assessing traffic, leading to more accurate traffic information. GM-1005, [0009]; GM-1003, ¶60.

Primary Configuration for the Knockart-Feldman Combination

Petition:

Sixth, Knockart expressly discloses that the in-vehicle system communicates wirelessly with the server “over a standard analog cellular telephone system” or “digital cellular telephone links[.]” *Id.*, [0074], [0078], [0086]. Thus, it would have been obvious to implement Knockart’s in-vehicle system using cell phones (as suggested by Feldman) because cell phones were already configured to utilize such cellular telephone systems. GM-1003, ¶65.

Knockeart's System is Configured for Cellular Capability

Knockeart:

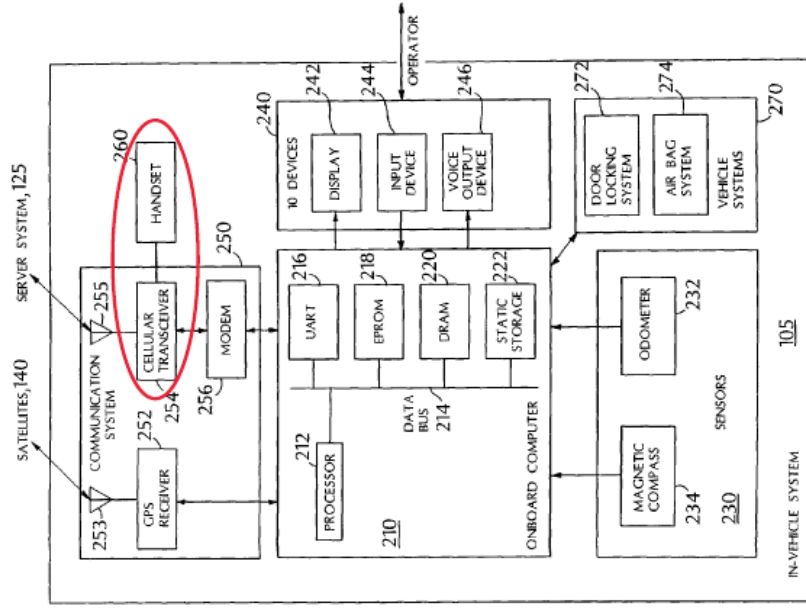


FIG. 2

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Location Self-Reporting by Cell Phones was Well-Known by 2004

Petition:

Seventh, a POSITA would have been prompted to modify Knockeart's navigation system to utilize vehicle-carried cell phones to populate at least some of the traffic data in the traffic database 524 (as suggested by Feldman)

• • •

Indeed, it was well-known in the art prior to 2004 to utilize cell phones as probes to collect traffic data. *See e.g.*, GM-1006, [0012]-[0013]; GM-1007, 1:42-54, 2:56-3:2; GM-1010, 7:51-54; GM-1003, ¶67.

As discussed above, Knockeart describes using vehicles as probes to collect traffic data, which, in the Knockeart-Feldman combination, includes using vehicle-carried cell phones as probes. GM-1004, [0318]-[0319]; GM-1005, [0061]

Location Self-Reporting by Cell Phones was Well-Known by 2004

Patent Owner's Response:

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.

Feldman Discloses Self-Reporting of Cellphone Location Information in Knockeart-Feldman Combination

Feldman:

the present invention features mobile sensors as most advantageous for acquiring vehicular traffic data and information, even though they have lower confidence levels. A growing number of mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of transmitting vehicular locations to a computerized central data and information receiving and processing system. Such mobile wireless communication devices are telemetric devices with GPS capabilities, anti-theft devices, and, driver-carried devices such as computer laptops and cellular phones.

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GM-1005, [0008], [0053]; Pet., 8-9, 11-12, 22; Pet. Rep., 12, 14.

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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Feldman Discloses Self-Reporting of Cellphone Location Information in Knockeart-Feldman Combination

Dr. Braasch:

Feldman discloses that “mobile sensors or electronic devices provid[e] dynamic *vehicle location* and velocity data and information *to the computerized central traffic data and information handling system*.” GM-1005, [0035]. In another example, Feldman discloses that “mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of transmitting vehicular locations to a computerized central data and information receiving and processing system.” *Id.*, [0053]; *see also id.*, [0071]. As discussed above, at least some of the mobile devices in the predictable combination are “cellular phones.” *Id.*, [0053].

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Knockeart Also Discloses Self-Reporting of Vehicle Location information in the Knockeart-Feldman Combination

Petition:

[1.4] wherein the traffic condition is at least in part based on a plurality of cell phone speeds estimated through an assessment of multiple locations of each of a plurality of cell phones,

Knockeart discloses use of a “traffic database,” which includes typical speeds that can be used in route planning, and can also include real-time data “obtained from probe vehicles[.]” GM-1004, [0170]; GM-1003, ¶76. The server system “makes use of some or all vehicles 100 as ‘probes’ for collecting traffic information” which is fed into the traffic database. GM-1004, [0318]; GM-1003, ¶77. The server system can also “send[] updated traffic information to the external information system,” so that the “vehicle navigation system can be a source of traffic information in addition to, or instead of, being a consumer of traffic information from external information system 130.” GM-1004, [00318]. “[T]raffic ‘profile’ data is collected by the in-vehicle systems in probe vehicles.” *Id.*, [0319]. “At the server system, navigation application 512 receives the logged speed information from a number of probe vehicles” and “[u]sing this collected information, the navigation application updates traffic database 524.” *Id.*, [0325]; GM-1003, ¶¶78-79.

Primary Configuration for the Knockart-Feldman Combination

Petition:

Knockart further describes that the user interface of the in-vehicle cellular phone probes in the resulting Knockart-Feldman combination “includes multiple push buttons associated with display 242” that allow the user “to *select alternatives* shown on display 242, or to scroll the *list* of displayed alternatives” when selecting between multiple available options. GM-1004, [0118], *see also* [0032] (“accepting a selection from the *list* of categories”), [0211] (“...scrolling lists from which the operator chooses”), [0219] (“...selecting from a displayed list of choices”), [0230].

This would have especially been beneficial in the Knockart-Feldman combination in which the in-vehicle systems for probe vehicles are implemented as cell phones. *Id.*

Primary Configuration for the Knockart-Feldman Combination

Petition:

Alternatively, it would have been obvious to provide the options provided by Knockart's user interface for enabling or disabling the multiple modes of location data collection as a "list" based on Knockart's teachings for scrolling lists of available options presented by the user interface because the in-vehicle systems of probe vehicles (implemented as cell phones in the Knockart-Feldman combination) are expressly described as presenting lists for allowing users to make selections and therefore implementing the "enabling or disabling" options using such lists would have eliminated the need for developing another method of allowing such user selection. GM-1003, ¶¶87-88.

Alternative Configurations for the Knockart-Feldman Combination

Dr. Braasch:

In some implementations, all of the in-vehicle systems described by Knockart would have been implemented as vehicle mounted or user carried cellular phones. In the alternative or in addition to such a modification to Knockart's system based on Feldman, a POSITA would have been prompted to implement Knockart's system to utilize Feldman's vehicular traffic data collected by tracking "vehicle-carried" cellular telephones as one of the external traffic information sources expressly described in Knockart. GM-1005, [0007]-[0009], [0036], [0038], [0053], [0058]-

Alternative Configurations for the Knockart-Feldman Combination

Dr. Braasch:

A POSITA would have further recognized that

Feldman's teachings would have been beneficially applied to Knockart's system in one or more predictable manners.

For example, a POSITA would have predictably applied the teachings of Feldman to Knockart to use Feldman's traffic data collected from vehicle-carried cellular phones to provide at least part of the vehicle traffic information used by Knockart's system. For example, a POSITA would have predictably applied the teachings of Feldman to Knockart to implement all or a portion of Knockart's in-vehicle systems as cellular phones for the purpose of collecting probe vehicle traffic data. In some such implementations, some vehicles would have utilized the specialized in-vehicle systems described by Knockart while other vehicles used vehicle mounted cellular phones or user carried cellular phones as the in-vehicle systems in the resulting combination.

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The Knockart-Feldman Combination

Dr. Braasch:

A POSITA would have recognized that implementing Knockart's in-vehicle system as already existing cellular phones already in the possession of drivers would have eliminated the need for users of Knockart's navigation system to purchase multiple pieces of potentially expensive computing equipment by implementing multiple functions in a single device (cell phones already in the possession of users).

For example, a POSITA would have predictably applied the teachings of Feldman to Knockart to implement all or a portion of Knockart's in-vehicle systems as cellular phones for the purpose of collecting probe vehicle traffic data.

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GM-1003, ¶¶ 61, 76; Pet., 11-12, 19-20. 31

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

The Knockart-Feldman Combination

Dr. Braasch:

91. In addition to or alternative to the above discussed disclosures of Feldman, Knockart also discloses that the in-vehicle system for each probe vehicle (implemented in whole or in part as vehicle carried cellular phones in the predictable Knockart-Feldman system) communicates through a cellular network infrastructure to a server for calculation of the traffic condition. For example, Knockart describes that each in-vehicle system “*tracks the vehicle’s location* on main roads network” using “GPS location estimates it receives from its GPS receiver[.]” GM-1004, [0322].

This would have been especially beneficial in the Knockart-Feldman combination in which the in-vehicle systems for probe vehicles are implemented as cellular phones.

The Knockart-Feldman Combination

Dr. Braasch:

95. In addition to or alternative to the above discussed disclosures of Feldman, Knockart also discloses that the in-vehicle system for each probe vehicle (implemented in whole or in part as vehicle carried cellular phones in the predictable Knockart-Feldman system) communicates through a cellular network infrastructure to a server for calculation of the traffic condition. For example,

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Feldman Discloses Self-Reporting of Location Information from GPS Enabled Cellphones

Feldman's Cell Phones Self-Report Location Information

Feldman:

[0018] Thus, according to the present invention, there is provided a method and a system for modeling and processing vehicular traffic data and information, comprising: (a) transforming a spatial representation of a road network into a network of spatially interdependent and interrelated oriented road sections, for forming an oriented road section network; (b) acquiring a variety of the vehicular traffic data and information associated with the oriented road section network, from a variety of sources; (c) prioritizing, filtering, and controlling, the vehicular traffic data and information acquired from each of the variety of sources; (d) calculating a mean normalized travel time (NTT) value for each oriented road section of said oriented road section network using the prioritized, filtered, and controlled, vehicular traffic data and information associated with each source, for forming a partial current vehicular traffic situation picture associated with each source; (e) fusing the partial current traffic situation picture associated with each source, for generating a single complete current vehicular traffic situation picture associated with entire oriented road section network; (f) predicting a future complete vehicular traffic situation picture associated with the entire oriented road section network; and (g) using the current vehicular traffic situation picture and the future vehicular traffic situation picture for providing a variety of vehicular traffic related service applications to end users.

[0024] FIG. 3 is a pictorial diagram illustrating exemplary results obtained from the process of path identification using vehicular traffic data and information acquired from mobile sensors of a cellular phone mobile communication network, in accordance with the present invention;

[0036] Another main aspect of the present invention relates to efficient combining or fusing of a variety of vehicular traffic data and information which are acquired, collected, or gathered, using a combination of various techniques based on networks of fixed or static traffic sensors or electronic devices, mobile wireless communications networks or systems such as GPS and/or cellular telephone networks or systems, and, various other manual and electronic types of vehicular traffic data and information such as traffic reports, incorporating in the fusion process the historical and/or event related vehicular traffic data and information that is accumulated, analyzed, and processed, from previously accumulated vehicular traffic data and information in the same system.

Feldman's Cell Phones Self-Report Location Information

Feldman:

[0008] For obtaining dynamic vehicle location and velocity data and information, having varying degrees of accuracy and precision, from uniquely or specifically dedicated in-vehicle mobile sensors or electronic devices, such prior art techniques make use of well known global positioning system (GPS) and/or other types of mobile wireless communication or electronic vehicular tracking technologies, such as cellular telephone or radio types of mobile wireless communications networks or systems, involving the use of corresponding mobile wireless devices such as cellular telephones, laptop computers, personal digital assistants (PDAs), transceivers, and other types of telemetric devices, which are uniquely or specifically designated or assigned to a particular vehicle.

the present invention features mobile sensors as most advantageous for acquiring vehicular traffic data and information, even though they have lower confidence levels. A growing number of mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of transmitting vehicular locations to a computerized central data and information receiving and processing system. Such mobile wireless communication devices are telemetric devices with GPS capabilities, anti-theft devices, and, driver-carried devices such as computer laptops and cellular phones.

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Feldman's Cell Phones Self-Report Location Information

Feldman:

[0035] 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, from an 'arbitrary', non-pre-determined or non-designated, population or group of vehicles each including a uniquely or specifically designated or assigned mobile sensor or electronic device, therefore, resulting in a potentially large 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.

A POSITA Would Have Understood Feldman's Disclosure of Self-Reporting of Location Information by Cell Phones

Dr. Braasch:

Feldman makes clear that one of its sources of traffic information is GPS enabled cellphones "transmitting vehicular locations to" a central traffic server. GM-1005, [0053]; GM-1003, ¶89. Specifically, as I addressed in my initial declaration, Feldman states that "mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of *transmitting vehicular locations to a computerized central data and information receiving and processing system.*" GM-1005, [0053] (emphasis added). Feldman goes on to describe that "[s]uch mobile wireless communication devices" that include this ability for transmitting vehicular locations can be configured to include "GPS capabilities" and include devices such as "computer laptops and *cellular phones.*" *Id.* (emphasis added).

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GM-1018, ¶14; Pet. Rep., 12-13. 38

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Feldman's Cell Phones Self-Report Location Information

Dr. Braasch:

17. Returning to Feldman, Feldman describes the well-known prior art technique of collecting “vehicular traffic data and information *acquired from mobile sensors of a cellular phone mobile communication network*.” GM-1005, [0024]. This disclosure reveals that Feldman expressly describes acquiring vehicle traffic data from the mobile phones themselves, and not exclusively from monitoring cell tower handovers. GM-1003, ¶¶56, 80, 89, 93. I identified several examples in Feldman of GPS enabled cellphones collecting and reporting traffic information in my first declaration. GM-1003, ¶56 (citing GM-1005, [0024]), ¶80, (citing GM-1005, [0035]-[0036], [0053]), ¶89 (citing GM-1005, [0053]), ¶93 (citing GM-1005, [0035], [0008]-[0009])

Feldman's Cell Phones Self-Report Location Information

Dr. Braasch:

Feldman describes “acquiring a variety of the vehicular traffic data and information associated with the oriented road section network, from a variety of sources” including cellular telephones traveling in vehicles along the road sections. GM-1005, Abstract. Feldman discloses that it was known in the art to collect traffic data using “mobile sensors or electronic devices physically located in or attached to vehicles[.]” GM-1005, [0007]. The primary example of such a mobile sensor described in Feldman is “mobile wireless devices such as *cellular telephones*” that were used to collect and report “dynamic *vehicle location and velocity data* and information[.]” *Id.*, [0008]; *see also id.*, [0009], [0035]-[0036], [0038], [0053].

Feldman's Cell Phones Self-Report Location Information

Dr. Braasch:

Feldman discloses that “mobile sensors or electronic devices provid[e] dynamic *vehicle location* and velocity data and information *to the computerized central traffic data and information handling system*.” GM-1005, [0035]. In another example, Feldman discloses that “mobile wireless communication devices are increasingly being installed or carried in vehicles, and are capable of transmitting vehicular locations to a computerized central data and information receiving and processing system.” *Id.*, [0053]; *see also id.*, [0071]. As discussed above, at least some of the mobile devices in the predictable combination are “cellular phones.” *Id.*, [0053].

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Knockeart's Technique for Selectively Enabling and Disabling Location Tracking is Fully Applicable to Feldman's Cellphone Tower Handover Location Tracking Disclosure

Navigation Systems Can Be Restricted From Receiving Handover Data

Dr. Braasch:

a POSITA would have also recognized that it would have been obvious and beneficial to apply the teachings of Knockeart to the cellphone tower handover tracking implementation of Feldman to selectively enable or disable tracking of cellphone tower handovers.

In the Knockeart-Feldman combination, a POSITA would have found it beneficial to require user permission to track cellphone tower handovers to identify cellphone locations and speeds, as suggested by both Knockeart and Feldman. Specifically, Feldman states that in some implementations of its traffic data collection system, “[t]racking vehicles” requires “the knowledge and *consent* of their drivers.” GM-1005, [0064]. Knockeart provides additional details for providing a user interface to user’s of the combined system to obtain such consent from drivers.

As such, a POSITA still would have found it obvious and beneficial to include functionality for enabling or disabling access to cellphone tower handover information by the traffic identification and navigation system in the resulting combination (based on the functionality described in Knockeart). GM-1003, ¶¶84-85. A POSITA would have recognized that restricting access by the navigation system to such cellphone location data satisfies “selectively enable[ing] or disable[ing] access to user cellphone location data.”

24. A POSITA would have recognized that the administrative and control messages described by Feldman would have been available to the cellular network in the resulting system. However, a POSITA would have further recognized that it would have been obvious and beneficial to implement the functionality for enabling or disabling location tracking (as described in Knockeart) to prevent the resulting system from tracking the user’s location and to prevent the cellular network from providing such location tracking information to the traffic determination and navigation system of the resulting system.

THANK YOU