Title: NAVIGATION SYSTEM AND METHOD FOR DISPLAYING POI OF LAND MARK

Abstract: Disclosed are a navigation system and a method for displaying POI (Point Of Interest) information in which landmark POI information, which is designated POI information of POI information existing in path data provided by the navigation system, can be displayed permitting the landmark POI information to be always included in the path data by adjusting a display priority with respect to the landmark POI information, even when the POI information provided in the path data according to positions of a vehicle is changed.
NAVIGATION SYSTEM AND METHOD FOR DISPLAYING POI OF LANDMARK

Technical Field
The present invention relates to a navigation system and a method for displaying landmark POI (Point Of Interest) information, and more particularly, to a navigation system and a method for displaying landmark POI information, in which landmark POI information, which is designated POI information of POI information existing in path data provided by the navigation system, can be displayed permitting the landmark POI information to be always included in the path data by adjusting a display priority with respect to the landmark POI information, even when the POI information provided in the path data according to positions of a vehicle is changed.

Background Art
In general, a navigation system providing path information for traveling of a vehicle such as an automobile and the like by using an artificial satellite has respective POI (Point Of Interest) information based on map data. The POI information denotes data displaying, on a map, coordinates of major facilities such as gas stations, airports, terminals, hotels, and the like. Thus, the navigation system can provide path data including road information and POI information based on map data existing on a path in consideration of positions of a traveling vehicle.

However, since all of the road information and POI information included in the path cannot be simultaneously displayed in a limited display area, POI information required for a traveling path is displayed by permitting the POI information to be included in the path data considering a present position of the vehicle. Here, a conventional navigation system selects POI information, which is required to be designated and displayed on path data, as landmark POI information, so that a predetermined number of landmark POI information can be displayed in order of closest to the present vehicle position. However, the landmark POI information is not always included in the display area even though it is included in the path data according to the vehicle position. Referring to FIG. 1, each map data 101a and 102a overlapped on a
display area is displayed in each section 101 and 102. Specifically, when the map data 101a and 102a is overlapped in path data, landmark POI information (Seoul tower, Dong-kuk university) included in the map data is disadvantageously displayed or not displayed on the display area according to the vehicle position. This is because a predetermined number of landmark POI information is displayed in order of closest to the present vehicle position. That is, the conventional navigation system may provide or may not provide landmark POI information which exists either on a path on which the vehicle has already passed or at a relatively long distance from the present vehicle position regardless of its priority.

However, since landmark POI information is to be provided by selecting POI information being helpful for vehicle traveling from among POI information, it is preferably for the landmark POI information being helpful for the vehicle traveling to be always provided. Thus, in the present invention, a display priority pertaining to landmark POI information is determined, and landmark POI information is displayed by permitting the landmark POI information to be always included in the path data provided according to the vehicle position.

**Disclosure of Invention**

**Technical Goals**

An aspect of the present invention provides a navigation system and a method for displaying landmark POI (Point Of Interest) information in which landmark POI information having priority information within a predetermined n-th order from among landmark POI information included in path data of a vehicle is displayed in a display area considering the vehicle position by determining priority of the landmark POI information, so that landmark POI information having a relatively high priority is always displayed on the path data.

Another aspect of the present invention provides a navigation system and a method for displaying landmark POI (Point Of Interest) information in which POI information, which is required to be designated and displayed from among POI information, is selected as landmark POI information in order to help driver's traveling, and priority information corresponding to each landmark POI information is determined, so that landmark POI information is always displayed on path data even when a display
area is changed.

**Technical solutions**

According to an aspect of the present invention, there is provided a method for displaying POI (Point Of Interest) information, which comprises: maintaining, in a priority database, priority information corresponding to each landmark POI information; verifying landmark POI information existing in path data of a traveling vehicle; retrieving, from the priority database, priority information of the verified landmark POI information; identifying priority information within a predetermined n-th order from among the retrieved priority information; and displaying, in a display area, landmark POI information of the identified priority information in consideration of a position of the vehicle.

According to another aspect of the present invention, there is provided a navigation system for displaying landmark POI information, which comprises: a priority database maintaining priority information corresponding to each landmark POI information; an information retrieval unit verifying landmark POI information existing in path data of a traveling vehicle, and retrieving, from the priority database, priority information of the verified landmark POI information; a priority identification unit identifying priority information within a predetermined n-th order from among the retrieved priority information; and a display unit displaying, in a display area, landmark POI information of the identified priority information in consideration of a position of the vehicle.

**Brief Description of Drawings**

FIG. 1 is a diagram illustrating an example in which landmark POI information is displayed according to a conventional invention;

FIG. 2 is a block diagram illustrating a configuration of a navigation system according to an exemplary embodiment of the present invention;

FIG. 3 is a diagram illustrating a configuration of a priority database according to the present invention;

FIG. 4 is a diagram illustrating an example in which landmark POI information is displayed according to the present invention; and
FIG. 5 is a flowchart illustrating a method for displaying POI information according to an exemplary embodiment of the invention.

**Best Mode for Carrying Out the Invention**

Reference will now be made in detail to embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. The embodiments are described below in order to explain the present invention by referring to the figures.

FIG. 2 is a block diagram illustrating a configuration of a navigation system according to an exemplary embodiment of the present invention.

A navigation system 200 includes a path database 201, a landmark database 202, a priority database 203, an information retrieval unit 204, a priority identification unit 205, a display determination unit 206, and a display unit 207. More specifically, the navigation system 200 determines priority information with respect to landmark POI information, and permits landmark POI information to be always included in path data even when POI information provided on the path data based on positions of a vehicle according to the determined priority information is changed.

Hereinafter, the present invention will be described in detail based on each component of the navigation system 200.

The path database 201 stores path data including road information and POI information based on map data. The road information includes road types such as highway road, national road, local road, and the like, and lane information such as one lane, two-lane, four-lane, and the like. The road information may be updated according to a modified lane, a newly constructed road, and a relocated road for each predetermined time period. The POI information denotes data displaying, on a map, coordinates of major facilities such as gas stations, airports, terminals, hotels, and the like. For example, 'jongro-3ga station', 'Seoul theater', 'national tax service' and the like based on the Jongro-gu area of Seoul may be POI information.

The landmark database 202 stores at least one landmark POI information corresponding to the path data. The landmark POI information denotes information on a landmark-like building which is required to be designated and displayed from among the POI information. For example, 'Seoul station', '63 building', 'Seoul tower' and
the like based on Seoul area may be determined as landmark POI information. The landmark POI information may be determined by an operator of the navigation system 200, and updated according to traveling inclination of a driver.

Referring to FIG. 3, the priority database 203 stores priority information corresponding to each of at least one landmark POI information stored in the landmark database 202. The priority information is digitized to be expressed according to priority of landmark POI information, and is used when determining a display priority afterward. For example, priority information may be determined differently from each other according to priority of landmark POI information such as 'sejong center for the performing arts 5', 'Seoul city hall 4', 'national tax service 3', and the like, based on jongro-gu of Seoul. Also, the priority information may be determined such as 'coex 5', 'trade center 5', and the like based on gangnam-gu of Seoul. The priority information may be determined by the operator of the navigation system 200, and updated according to the traveling inclination of the user, which are similar to the landmark POI information.

The information retrieval unit 204 verifies one or more landmark POI information existing in path data of a traveling vehicle, and retrieves, from the priority database 203, priority information of the verified landmark POI information. The information retrieval unit 204 may determine, in real time, either path data from the present vehicle position according to a traveling direction of the vehicle, or path data from an origin to a destination after a driver of the vehicle selects the origin and the destination. Once the path data is determined, the information retrieval unit 204 identifies the present vehicle position, and verifies, from the landmark database 202, landmark POI information within a predetermined range from the identified position.

At this time, the information retrieval unit 204 may verify landmark POI information of path data included in one screen of a display area of the navigation system 200 based on the display area. The display area may vary depending upon various type terminals providing the navigation system 200. The display unit 207 may display, in path data, landmark POI information having a relatively higher priority from among landmark POI information existing on path data to be included in one screen of each terminal. Specifically, in a conventional art, a predetermined number of landmark POI information is displayed in order of closest to a present vehicle position,
however, in the present invention, landmark POI information to be displayed may be determined according to priority of landmark POI information.

To this purpose, the priority identification unit 205 identifies priority information within a predetermined n-th order from among the retrieved priority information. The n-th order may be flexibly determined according to priority of landmark POI information, and determined as a numerical value considering an appropriate number of landmark POI information to be displayed in one screen. For example, in the case where ten landmark POI information is included in one display area, top five landmark POI information having a relatively higher priority may be always displayed on the display area. Otherwise, only several landmark POI information from among the ten landmark POI information may be always displayed in the display area considering a distance from a present vehicle position.

The display unit 207 may display, in the display area, landmark POI information of the identified priority information considering a position of the vehicle. At this time, the display unit 207 selects landmark POI information having a relatively higher priority from among the identified priority information, and displays, in the display area, the selected landmark POI information. Also, the display unit 207 modifies the display area depending upon a traveling direction of the vehicle, and displays, in the modified display area, landmark POI information when the landmark POI information displayed on the former display area exists on the modified display area.

Referring to FIG. 4, in each section 401 and 402, landmark POI information of 'Seoul Tower', and 'dong-kuk university' is overlapped in a display area. Referring to FIG. 1, in the conventional art, the landmark POI information of 'Seoul Tower', and 'dong-kuk university' is displayed in the segment 101, and is not displayed in the segment 102. In this regard, in order to solve such a problem of the conventional art, according to the present invention, overlapped landmark POI information of each segment 401 and 402 is displayed in both segments 401 and 402. This is to help a driver's traveling, and thus, the driver verifies landmark POI information generally well known, so that the driver can check a present vehicle position, a destination position, and the like.

The display determination unit 206 determines a display priority pertaining to
landmark POI information included in the display area by using priority information of
the landmark POI information and a distance from the present vehicle position. For
element, as for first landmark POI information or second landmark POI information
included in the display area, when priority information of landmark POI information of
the first landmark POI information existing at a relatively long distance from the present
vehicle position is higher than priority information of the second landmark POI
information existing at the relatively short distance, the display determination unit 206
may determine a display priority of the first landmark POI information to be higher than
a display priority of the second landmark POI information.

That is, when landmark POI information has a relatively higher priority in view
of a driver's traveling in spite of existing at a relatively long distance from the present
vehicle position, the landmark POI information existing at the long distance is displayed
instead of landmark POI information existing at the relatively short distance. This is to
overcome a problem of the conventional art in that a predetermined number of landmark
POI information is uniformly displayed in order of closest to the present vehicle
position, and to help the driver's traveling.

FIG. 5 is a flowchart illustrating a method for displaying POI information
according to an exemplary embodiment of the invention. A method for displaying POI
information according to the present exemplary embodiment of the invention may be
performed by the same navigation system 200 as illustrated in FIG. 2.

In operation 501, the navigation system 200 stores the path database 201 storing
path data, the landmark database 202 storing landmark POI information, and the priority
database 203 storing priority information corresponding to each landmark POI
information, respectively. The path data includes road information and POI
information based on map data. The landmark POI information denotes POI
information which is designated from among POI information existing on the path data
in order to be helpful for a driver's traveling. For example, 'Seoul station', '63
building', 'Seoul Tower', and the like may be determined as landmark POI information
based on the Seoul area. The priority information is digitized to be expressed
according to priority of landmark POI information (see FIG. 3).

In operation 502, the information retrieval unit 204 of the navigation system
200 verifies, from the landmark database 202, at least one landmark POI information
existing in the path data of the traveling vehicle. The information retrieval unit 204 may determine, in real time, path data from the present vehicle position according to a traveling direction of the vehicle, or path data from an origin to a destination after the driver of the vehicle selects the origin and the destination. Once the path data is determined, the information retrieval unit 204 identifies the present vehicle position, and verifies, from the landmark database 202, landmark POI information within a predetermined range from the identified position.

In operation 503, the information retrieval unit 204 retrieves, from the priority database 203, priority information corresponding to the verified landmark POI information. Referring to FIG. 3, priority information of landmark POI information included in the 'jongro-gu' area of Seoul can be retrieved using 'sejong center for the performing arts 5', 'Seoul city hall 4', 'national tax service 3', and the like.

In operation 504, the priority identification unit 205 identifies priority information within a predetermined n-th order from among the retrieved priority information. The n-th order may be determined as a predetermined number of top landmark POI information having a relatively high priority information. The navigation system 200 may flexibly modify the n-th order according to priority of landmark POI information, and determine the n-th order considering appropriate number of landmark POI information to be displayed on one screen.

In operation 505, the display determination unit 206 determines a display priority pertaining to landmark POI information included in the display area by using priority information of landmark POI information and a distance from the present vehicle position. For example, a display priority of landmark POI information having a relatively higher priority from among landmark POI information which are at a relatively short distance from the present vehicle position may be determined to be relatively higher.

In operation 506, the display unit 207 displays, in a display area, landmark POI information of the identified priority information considering the present vehicle position. At this time, the display unit 207 modifies the display area according to a traveling direction of the vehicle, and displays, on the modified display area, landmark POI information when the landmark POI information displayed on the former display area exists on the modified display area. Referring to FIG. 4, when landmark POI
information (Seoul tower, dong-kuk university) displayed on the former display area 401 exists on the modified display area 402, the display unit 207 may display, on the modified display area, the landmark POI information (Seoul tower, dong-kuk university).

As described above, according to the present invention, priority information of landmark POI information is determined, and landmark POI information having priority information within a predetermined n-th order from among landmark POI information included in path data of the vehicle is displayed in a display area considering the present vehicle position, so that the landmark POI information having a relatively higher priority can be always displayed in the path data.

The method for displaying POI information according to the above-described exemplary embodiments of the present invention may be recorded in computer-readable media including program instructions to implement various operations embodied by a computer. The media may also include, alone or in combination with the program instructions, data files, data structures, and the like. The media and program instructions may be those specially designed and constructed for the purposes of the present invention, or they may be of the kind well-known and available to those having skill in the computer software arts. Examples of computer-readable media include magnetic media such as hard disks, floppy disks, and magnetic tape; optical media such as CD ROM disks and DVD; magneto-optical media such as optical disks; and hardware devices that are specially configured to store and perform program instructions, such as read-only memory (ROM), random access memory (RAM), flash memory, and the like. Examples of program instructions include both machine code, such as produced by a compiler, and files containing higher level code that may be executed by the computer using an interpreter. The described hardware devices may be configured to act as one or more software modules in order to perform the operations of the above-described exemplary embodiments of the present invention.

As described above, according to the present invention, priority information of landmark POI information is determined, and landmark POI information having priority information within a predetermined n-th order from among landmark POI information included in path data of the vehicle is displayed in a display area considering the present vehicle position, so that the landmark POI information having a relatively higher
priority can be always displayed in the path data.

According to the present invention, POI information, which is required to be designated and displayed from among POI information, is selected as landmark POI information, and priority information corresponding to each landmark POI information is determined, so that landmark POI information having a relatively higher priority can be always displayed on path data even when a display area is changed.

According to the present invention, when priority information of landmark POI information existing at a relatively long distance from the present vehicle position is higher than priority information of landmark POI information existing at a relatively short distance therefrom, the landmark POI information at the long distance is displayed in a display area, so that landmark POI information having a relatively higher priority can be always displayed on path data.

Although a few embodiments of the present invention have been shown and described, the present invention is not limited to the described embodiments. Instead, it would be appreciated by those skilled in the art that changes may be made to these embodiments without departing from the principles and spirit of the invention, the scope of which is defined by the claims and their equivalents.
1. A method for displaying POI (Point Of Interest) information, the method comprising:
   maintaining, in a priority database, priority information corresponding to each landmark POI information;
   verifying landmark POI information existing in path data of a traveling vehicle;
   retrieving, from the priority database, priority information of the verified landmark POI information;
   identifying priority information within a predetermined n-th order from among the retrieved priority information; and
   displaying, in a display area, landmark POI information of the identified priority information in consideration of a position of the vehicle.

2. The method of claim 1, wherein the displaying includes:
   determining a display priority pertaining to landmark POI information included in the display area by using the retrieved priority information and a distance between a present position of the vehicle and landmark POI information; and
   displaying the landmark POI information in the display area according to the determined display priority.

3. The method of claim 2, wherein,
   when landmark POI information existing at a relatively long distance from a present position of the vehicle from among the landmark POI information included in the display area is defined as first landmark POI information, and landmark POI information existing at a relatively short distance from the present vehicle position is defined as second landmark POI information, the determining includes:
   selecting arbitrary first landmark POI information; and
   determining a display priority of the first landmark POI information to be higher than a display priority of the second landmark POI information when priority information of the selected first landmark POI information is higher than priority information of the second landmark POI information.
4. The method of claim 1, wherein the landmark POI information is designated POI information from the POI information existing in the path data.

5. The method of claim 1, further comprising:
   maintaining the path data in a path database; and
   maintaining, in a landmark database, the landmark POI information corresponding to the path data.

6. The method of claim 1, wherein the verifying includes:
   determining the path data including landmark POI information; and
   identifying a position of the vehicle to verify landmark POI information within a predetermined range from the identified position.

7. The method of claim 1, wherein the displaying selects landmark POI information in which the retrieved priority information is relatively high, from among at least one landmark POI information included in the display area, and displays the selected landmark POI information in the display area in consideration of the vehicle position.

8. The method of claim 1, wherein the displaying includes modifying the display area according to a traveling direction of the vehicle; and displaying the landmark POI information in the modified display area when landmark POI information displayed in a previous display area exists in the modified display area.

9. A computer-readable recording medium storing a program for implementing the method of any one of claims 1 to 8.

10. A navigation system for displaying landmark POI (Point Of Interest) information, the navigation system comprising:
    a priority database maintaining priority information corresponding to each landmark POI information;
an information retrieval unit verifying landmark POI information existing in path data of a traveling vehicle, and retrieving, from the priority database, priority information of the verified landmark POI information;
a priority identification unit identifying priority information within a predetermined n-th order from among the retrieved priority information; and
a display unit displaying, in a display area, landmark POI information of the identified priority information in consideration of a position of the vehicle.

11. The navigation system of claim 10, further comprising:
a path database storing path data; and
a landmark database storing landmark POI information corresponding to the path data.

12. The navigation system of claim 10, wherein the information retrieval unit determines path data including landmark POI information, and identifies the vehicle position to verify, from the identified vehicle position, landmark POI information within a predetermined range.

13. The navigation system of claim 10, wherein the priority identification unit selects landmark POI information in which the retrieved priority information is relatively high, from among landmark POI information included in the display area, and the display unit displays, in a display area, the selected landmark POI information in consideration of the vehicle position.

14. The navigation system of claim 10, further comprising:
a display determination unit determining a display priority pertaining to landmark POI information included in the display area by using the retrieved priority information and a distance from a present position of the vehicle,
wherein the display unit displays, in a display area, landmark POI information according to the determined display priority.

15. The navigation system of claim 14, wherein the display determination unit
determines a display priority of landmark POI information existing at a relatively long
distance from the present vehicle position to be higher than a display priority of
landmark POI information existing at a relatively short distance from the present
vehicle position, when priority information of landmark POI information existing at the
relatively long distance from among landmark POI information included in the display
area is higher than priority information of landmark POI information existing at the
relatively short distance.

16. The navigation system of claim 10, wherein the display unit modifies a display
area according to a traveling direction of the vehicle, and displaying, in the modified
display area, the landmark POI information when landmark POI information displayed
in a previous display area exists in the modified display area.
FIG. 2

- INFORMATION RETRIEVAL UNIT
- PRIORITY IDENTIFICATION UNIT
- DISPLAY DETERMINATION UNIT
- DISPLAY UNIT

PATH DB
LANDMARK DB
PRIORITY DB
### FIG. 3

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<th>SEOUl</th>
<th>LANDMARK POI INFORMATION</th>
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FIG. 5

START

MAINTAIN PATH DB, LANDMARK DB, AND PRIORITY DB

VERIFY LANDMARK POI INFORMATION EXISTING IN AT LEAST ONE PATH DATA

RETrieve PRIORITY INFORMATION OF LANDMARK POI INFORMATION

IDENTIFY PRIORITY INFORMATION WITHIN PREDETERMINED N-TH ORDER

DETERMINE DISPLAY PRIORITY USING IDENTIFIED PRIORITY INFORMATION AND DISTANCE FROM PRESENT VEHICLE POSITION

DISPLAY LANDMARK POI INFORMATION IN DISPLAY AREA

END
INTERNATIONAL SEARCH REPORT

PCT/KR2007/004609

A. CLASSIFICATION OF SUBJECT MATTER

G08G 1/0969 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 GOIC 21/00 G08G 1/0968 1/0969 1/123

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and Applications for Utility models since 1975
Japanese Utility models and Applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS (KIPO Internal)
"Keywords landmark, POI, navigation and display"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<tr>
<td>A</td>
<td>KR1019980032878 A (ZANAVY INFORMATICS KK) 25 JULY 1998 See claim 1 and figures 3, 4, 6, 9</td>
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</tr>
<tr>
<td>A</td>
<td>KR101998002471 1A (AISIN AW CO LTD) 06 JULY 1998 See pages 6-7 and figure 20</td>
<td>1-16</td>
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<td>A</td>
<td>JP2006162270 A (NISSAN MOTOR CO LTD , XANAVI INFORMATICS CORP) 22 JUNE 2006 See claims 1-8 and figures 3, 5</td>
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<tr>
<td>A</td>
<td>JP2004286653 A (AISINAW CO LTD) 14 DECEMBER 2004 See claims 1-7 and figure 1</td>
<td>1-16</td>
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<tr>
<td>A</td>
<td>JP2000131084 A (MATSUMITA ELECTRIC IND CO LTD) 12 MAY 2000 See claims 1-2 and figures 1-4</td>
<td>1-16</td>
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Further documents are listed in the continuation of Box C

See patent family annex

* Special categories of cited documents
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
"O" document referring to an oral disclosure use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search
26 DECEMBER 2007 (26 12 2007)

Date of mailing of the international search report

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No 82-42-472-7140

Authorized officer
LEE, HYEON HONG
Telephone No 82-42-481-8527

Form PCT/ISA/210 (second sheet) (April 2007)
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<td>US6078865A</td>
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<td>KR10 19980024711 A</td>
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<td>10.04.2003</td>
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