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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

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Declarations under Rule 4.17:

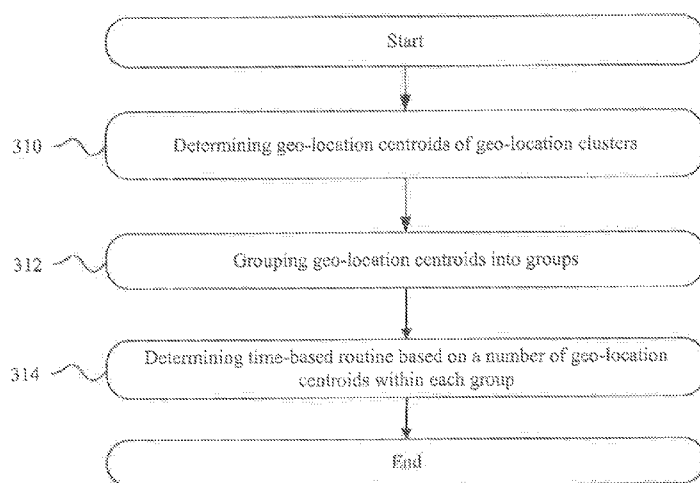
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

- *with international search report (Art. 21(3))*

[Continued on next page]

- (54) **Title:** ROUTINE ESTIMATION



- (57) **Abstract:** In one embodiment, a method includes determining a geo-location centroid of each of one or more geo-location clusters. The geo-location centroid corresponds to one or more geo-location data points within its geo-location cluster. The geo-location data points represent one or more location readings from a mobile computing device associated with a user. The geo-location centroids are based at least in part on location readings obtained during a particular time of day of a particular day of a week. The method also includes grouping one or more geo-location centroids into one or more groups; and determining a time-based routine based at least in part on a number of geo-location centroids within each group.

Figure 6 of 11



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) **Date of publication of the international search report:**
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/014839**A. CLASSIFICATION OF SUBJECT MATTER****G06Q 50/30(2012.01)i, H04W 4/02(2009.01)i**

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)

G06Q 50/30; H04W 24/00; G06F 7/00; G06F 17/30; H04Q 7/20; G01S 19/40; H04W 64/00; H04W 4/02

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

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: geo-location, cluster, centroid, routine, estimation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012-0108259 A1 (ANDREW WEISS) 03 May 2012 See abstract, paragraphs [0024],[0037]-[0043],[0047], claims 1-2,4,16,26 and figures 2-3.	1-20
A	US 2007-0149214 A1 (JOSEPH M. WALSH et al.) 28 June 2007 See abstract, claims 10-17 and figures 5-6.	1-20
A	US 2012-0208553 A1 (MARTIN ALLES et al.) 16 August 2012 See abstract, claims 1,11-16,24-27 and figures 4-6.	1-20
A	US 2012-0139781 A1 (SEUNG-HYUK JEONG et al.) 07 June 2012 See abstract, claims 1,5-6 and figures 8-9.	1-20
A	US 8370340 B1 (YAN YU et al.) 05 February 2013 See abstract, claims 1-3,7,13 and figure 3.	1-20

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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"E" earlier application or patent but published on or after the international filing date

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"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

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2014/014839

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2012-0108259 A1	03/05/2012	US 2013-316734 A1 US 8504062 B2	28/11/2013 06/08/2013
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