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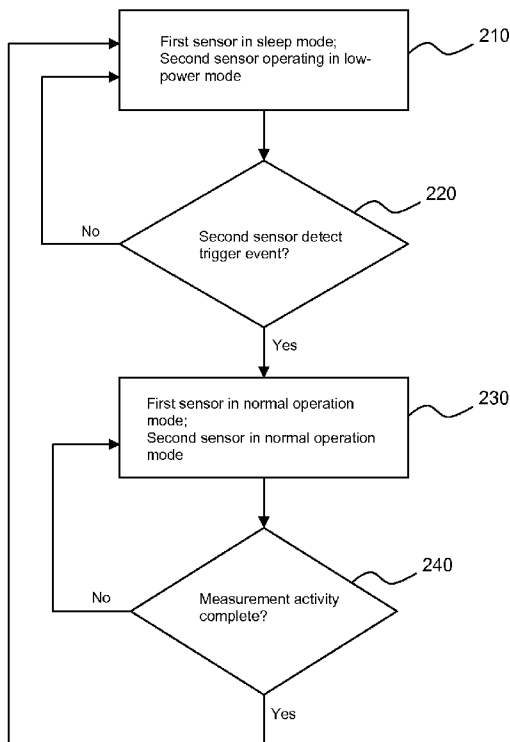
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(54) Title: MULTI-SENSOR DATA COLLECTION AND/OR PROCESSING



(57) Abstract: The subject matter disclosed herein relates to the control and utilization of multiple sensors within a device. For an example, motion of a device may be detected in response to receipt of a signal from a first sensor disposed in the device, and a power state of a second sensor also disposed in the device may be changed in response to detected motion.

Figure 2

WO 2008/118874 A3



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European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. G01D5/14 G01C21/16

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)
G01D G01C A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/237347 A1 (YAMAJI HIDENORI [JP] ET AL) 27 October 2005 (2005-10-27) the whole document	1-7
X	EP 1 132 713 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 12 September 2001 (2001-09-12) abstract paragraphs [0002] - [4.46], [0054]; figure 13	1,2,4,5, 14-16
A	US 2003/129995 A1 (NIWA SATOSHI [JP] ET AL) 10 July 2003 (2003-07-10) abstract; figures paragraph [0011]	6,7
X	US 2004/215419 A1 (HAVENS STEVEN W [US]) 28 October 2004 (2004-10-28) paragraph [0090] - paragraph [0135]	8-13
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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 document 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 another citation or other special reason (as specified)
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- *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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

17 October 2008

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International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98/13966 A (MARTIN COMMUNICATIONS PTY LTD [AU]; MARTIN ANDREW LOUIS [AU]) 2 April 1998 (1998-04-02) abstract -----	8-13
A	US 2004/105341 A1 (CHAMBERLAIN DONALD G [CA] ET AL) 3 June 2004 (2004-06-03) the whole document -----	8-12
A	EP 1 574 875 A (SONY ERICSSON MOBILE COMM AB [SE]) 14 September 2005 (2005-09-14) paragraphs [0019], [0037] - [0045] -----	8-12
X	US 5 889 474 A (LADUE CHRISTOPH K [US]) 30 March 1999 (1999-03-30) column 3, line 48 - column 5, line 40 -----	14-16
Y	US 2005/183274 A1 (CHO WOO-JONG [KR] ET AL) 25 August 2005 (2005-08-25) the whole document -----	18-21
Y	US 5 859 693 A (DUNNE JEREMY G [US] ET AL) 12 January 1999 (1999-01-12) paragraphs [0014] - [0016] -----	18-21
X	US 5 570 304 A (MARK JOHN G [US] ET AL) 29 October 1996 (1996-10-29) column 4, line 66 - column 5, line 29 -----	22-26
X	US 2002/169553 A1 (PERLMUTTER MICHAEL S [US] ET AL) 14 November 2002 (2002-11-14) paragraph [0013] -----	22-26
X	EP 1 755 098 A (BRUNSWICK CORP [US]) 21 February 2007 (2007-02-21) paragraph [0059] - paragraph [0074]; figure 3 paragraph [0039]; figure 3 -----	27-33

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/058060

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

Power management of a sensor, state being changed depending on a detected motion.

2. claims: 8-13

Method of storing the measurement of one or more sensors in a mobile station, these data being stamped with time information derived from a satellite positioning system

3. claims: 14-17

Method to determine if a mobile station entered or exited a defined perimeter.

4. claims: 18-21

Mobile station adapted to detect a motion based on the sensor data of an accelerometer and of a geomagnetic sensor, the geomagnetic sensor being externally positioned and coupled to the measurement processor.

5. claims: 22-26

calibration of sensors integrated in a mobile unit based on data of a satellite positioning system.

6. claims: 27-33

multi-sensor measurement processing unit to estimate navigational states with at least one sensor coupled to the processor and one other sensor wireless interconnected to said processing unit.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2005237347	A1	27-10-2005	JP 2005284596 A	13-10-2005
			US 2008058032 A1	06-03-2008
EP 1132713	A	12-09-2001	WO 0114832 A1	01-03-2001
			JP 3488144 B2	19-01-2004
			JP 2001059738 A	06-03-2001
			US 6448927 B1	10-09-2002
US 2003129995	A1	10-07-2003	JP 3651598 B2	25-05-2005
			JP 2003204572 A	18-07-2003
US 2004215419	A1	28-10-2004	NONE	
WO 9813966	A	02-04-1998	BR 9711547 A	27-11-2001
			CA 2267254 A1	02-04-1998
			EP 0965197 A1	22-12-1999
			JP 2001501395 T	30-01-2001
			NO 991498 A	14-05-1999
US 2004105341	A1	03-06-2004	US 2007253289 A1	01-11-2007
			US 2008189044 A1	07-08-2008
EP 1574875	A	14-09-2005	CN 1942776 A	04-04-2007
			WO 2005085895 A1	15-09-2005
			KR 20060125894 A	06-12-2006
			US 2007273582 A1	29-11-2007
US 5889474	A	30-03-1999	NONE	
US 2005183274	A1	25-08-2005	JP 4047335 B2	13-02-2008
			JP 2005221509 A	18-08-2005
			KR 20050079496 A	10-08-2005
US 5859693	A	12-01-1999	AU 735001 B2	28-06-2001
			AU 8901498 A	16-03-1999
			CA 2303843 A1	04-03-1999
			WO 9910709 A2	04-03-1999
			US 5949529 A	07-09-1999
US 5570304	A	29-10-1996	NONE	
US 2002169553	A1	14-11-2002	EP 1393093 A2	03-03-2004
			WO 02093189 A2	21-11-2002
EP 1755098	A	21-02-2007	EP 1758040 A2	28-02-2007
			EP 1755275 A2	21-02-2007
			US 2007032345 A1	08-02-2007
			US 2007033068 A1	08-02-2007
			US 2007033069 A1	08-02-2007