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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	01/26/2010	Philippe Kahn	8689P027C	5414

8791 7590 01/12/2011

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
COSIMANO, EDWARD R	
ART UNIT	PAPER NUMBER
2863	

MAIL DATE	DELIVERY MODE
01/12/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

SUPPLEMENTAL ***Notice of Allowability***	**Application No.** 12/694,135	**Applicant(s)** KAHN ET AL.	
	Examiner Edward R. Cosimano	**Art Unit** 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed 19 October 2010*.

2. ☒ The allowed claim(s) is/are *21-31*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other *Approved Drawing Correction*.

1. EXAMINER'S COMMENT

1.1 When preparing this Office action the Examiner considers the instant application to include:

A) the Oath/Declaration which was filed on 26 January 2010 and that is acceptable to the Examiner;

B) the content of the Abstract which was filed on 26 January 2010 and that is acceptable to the Examiner;

C) figures 1, 2, 3, 4, 5, 6, 7, 8 & 9 of the set of drawings containing 9 sheets of 9 figures comprising figure 2 as presented in the set of drawings filed on 26 January 2010 and figures 1, 3, 4, 5, 6, 7, 8 & 9 as presented in the set of drawings filed on 19 October 2010 where the content of figures 1, 2, 3, 4, 5, 6, 7, 8 & 9 of the above set of drawings is acceptable to the Examiner;

D) the written description as filed on 26 January 2010 and amended on 26 January 2010 and by the Examiner's amendment of 24 September 2010; and

E) the set of amended claims as filed on 26 January 2010; and

F) the NON-Publication request filed on 26 January 2010.

2. BENEFIT OF AN EARLIER FILING DATE

2.1 Applicant's claim for the benefit of an earlier filing date pursuant to 35 U.S.C. 120 is acknowledged.

3. PRIOR ART FROM EARLIER APPLICATIONS

3.1 The Examiner has considered the prior art cited in the applications for which Applicant has claimed the benefit of an earlier filing date pursuant to 35 U.S.C. 120.

3.1.1 If Applicant wishes any of the prior art that was cited in each of the base applications but that has not been cited during the prosecution of the instant application to appear on any Patent grated on the instant application, then Applicant must provide a properly completed PTO-1449 containing proper citations of the prior art that Applicant wishes to appear on any Patent that may be granted on the instant application.

3. REASONS FOR ALLOWANCE

3.1 The following is a statement of reasons for the indication of allowable subject matter:

A) the prior art, for example:

(1) either Richardson et al (5,976,083 or 6,135,951) or Ebeling et al (6,145,389) or Tsuji (2005/0232388 or 2005/0238132 or 7,169,084 or 7,297,088) or Darley (6,611,789 or 2007/0061105 or 2007/0208531 or 2010/0057398) or Park et al (2007/0067094) disclose a machine/process that provides the useful and beneficial function of monitoring the physical fitness activities of an user. To monitor the physical fitness activities of the user, an accelerometer is used in order to monitor the acceleration of the user during a physical fitness activity of the user. The measured acceleration of the user during a physical fitness activity is then suitably processed by being analyzed or evaluated in order to: (1a) detect any variation in the measured acceleration that would represent a particular physical fitness activity of the user; and (1b) to make a more accurate determination of the user's steps or strides in order to determine an accurate measurement of the user's step or stride distance for a particular physical fitness activity. In this manner the total distance that has been traveled by the user during a particular physical fitness activity may more accurately be determined based on the user's step or stride and the total distance traveled by the user during a step or stride. Where in either Darley (6,611,789 or 2007/0061105 or 2007/0208531 or 2010/0057398) when a step is not detected with in a predetermined period/interval of time and then wakes the pedometer up when a step is detected.

(2) either Sakuria et al (6,369,794) or Kubo et al (2002/0089425 or 6,700,499) or Ladetto et al (2003/0018430 or 6,826,477) disclose a machine/process that provides the useful and beneficial function of determining an user's action or motion in which the time variation of a measured acceleration, representing the user's action or motion, is evaluated or analyzed in order to determine the user's action or motion.

(3) either Seo et al (2006/0020177 or 7,334,472) disclose a machine/process that provides the useful and beneficial function of placing an acceleration based pedometer machine/process into a sleep or low power mode in which the sampling frequency is changed, when a step is not detected with in a predetermined period/interval of time and then wakes the pedometer up when a step is detected.

B) however, the prior art does not fairly teach or suggest in regard to claim 21 a process in claim 21 that provides the useful and beneficial function of placing a mobile device in a sleep or low activity mode by providing actions in claim 21 that perform at least the functions of:

(1) using an inertial sensor within the mobile device in order to detect motion of the mobile device;

(2) using the mobile device in order to determine if the motion that has been detected by the inertial sensor has a signature that is indicative of an user activity that the mobile device is configured to monitor; and

(3) entering the mobile device into a sleep mode when the motion that has been detected by the inertial sensor does not has a signature that is indicative of an user activity that the mobile device is configured to monitor.

Claims 22-24, which depend from claim 21, are allowable over the prior art for the same reason.

C) however, the prior art does not fairly teach or suggest in regard to claim 25 a process in claim 25 that provides the useful and beneficial function of setting an appropriate step cadence window for a mobile device by providing actions in claim 25 that perform at least the functions of:

(1) receiving from an accelerometer within the mobile device acceleration data/information that meets a stepping criteria;

(2) incrementing a step count by using the acceleration data/information that meets a stepping criteria; and

(3) setting a step cadence window in order for the mobile device to monitor the next step to be:

(3a) a default step cadence window when the step count is below a step count threshold; or

(3b) a default step cadence window when the step cadence of the current user does not match the step cadence profile of an user profile; and

(3c) a dynamic step cadence window when the step count is at or above the step count threshold.

Claims 26-31, which depend from claim 25, are allowable over the prior art for the same reason.

4. RELEVANT ART OF INTEREST

4.1 The Examiner has cited prior art of interest, for example:

A) either Kahn et al (2009/0043531 or 2009/0234614 or 2009/0319221 or 7,647,196 or 2010/0056872 or 7,753,861) are publication of a related application with at least one common inventor and a latter effective date.

5. CONCLUSION

5.1 Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Edward R. Cosimano whose telephone number is 571-272-0571. The Examiner can normally be reached on 571-272-0571 from 7:30am to 4:00pm.

5.2 If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Andrew Schechter, can be reached on 571-272-2302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

5.3 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ERC
012/10/2011

/Edward Cosimano/
Primary Examiner Unit 2857

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BIB DATA SHEET

CONFIRMATION NO. 5414

SERIAL NUMBER	FILING or 371(c) DATE / RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/694,135	01/26/2010	702	2857	8689P027C

APPLICANTS

Philippe Kahn, Aptos, CA;
Arthur Kinsolving, Santa Cruz, CA;
Mark Andrew Christensen, Santa Cruz, CA;
Brian Y. Lee, Aptos, CA;
David Vogel, Santa Cruz, CA;

**** CONTINUING DATA ***************************

This application is a CON of 11/644,455 12/22/2006 PAT 7,653,508 YES /ERC/

**** FOREIGN APPLICATIONS *************************** NONE /ERC/

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

02/05/2010

Foreign Priority claimed	35 USC 119(a-d) conditions met	Verified and Acknowledged	Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ Yes ☑ No	☐ Yes ☑ No	/EDWARD R COSIMANO/ Examiner's Signature	☐ Initials	CA	9	11	2

ADDRESS

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040
UNITED STATES

TITLE

Human Activity Monitoring Device

FILING FEE RECEIVED		
1090	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

BIB (Rev. 05/07).

APPROVED
/ERC/
21 December 2010

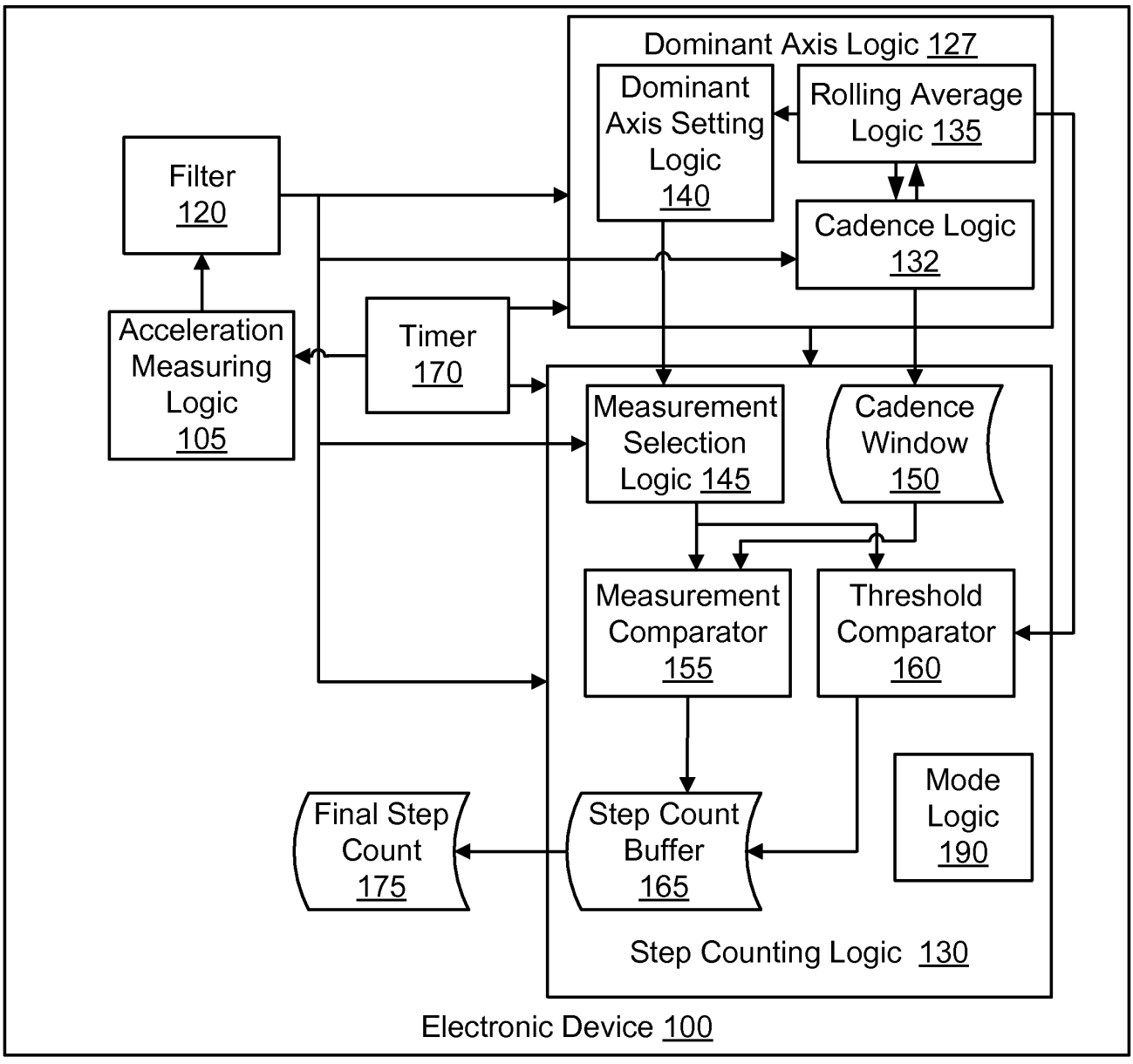

Figure 1

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	02/01/2011	7881902	8689P027C	5414

8791 7590 01/12/2011

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Philippe Kahn, Aptos, CA;
Arthur Kinsolving, Santa Cruz, CA;
Mark Andrew Christensen, Santa Cruz, CA;
Brian Y. Lee, Aptos, CA;
David Vogel, Santa Cruz, CA;

IR103 (Rev. 10/09)

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	01/26/2010	Philippe Kahn	8689P027C	5414

8791 7590 12/23/2010

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
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SUNNYVALE, CA 94085-4040

EXAMINER	
COSIMANO, EDWARD R	
ART UNIT	PAPER NUMBER
2863	

MAIL DATE	DELIVERY MODE
12/23/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Rule 312 Communication	Application No.	Applicant(s)
	12/694,135	KAHN ET AL.
	Examiner	**Art Unit**
	Edward R. Cosimano	2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ The amendment filed on *19 October 2010* under 37 CFR 1.312 has been considered, and has been:

   a) ☐ entered.

   b) ☒ entered as directed to matters of form not affecting the scope of the invention.

   c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
   Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

   d) ☐ disapproved. See explanation below.

   e) ☐ entered in part. See explanation below.

/Edward R. Cosimano/
Primary Examiner
Art Unit: 2857

Attorney's Docket No.: 8689P027C PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Philippe Kahn, et al.	Examiner: Cosimano, Edward R.
Application No.: 12/694,135	Art Unit: 2863
Filed: January 26, 2010	Confirmation No.: 5414
For: HUMAN ACTIVITY MONITORING DEVICE	Date of NOA: September 24, 2010

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

OK TO ENTER RULE 312
/ERC/
21 December 2010

AMENDMENT UNDER 37 C.F.R. § 1.312
(Amendment After Allowance)

Sir:

In Response to the Notice of Allowance mailed on September 24, 2010, the Applicant respectfully requests the Examiner to enter the following amendment.

Amendments to the Drawings begin on page 2 of this paper.

Remarks begin on page 3 of this paper.

CERTIFICATE OF ELECTRONIC FILING

I hereby certify that this correspondence is being deposited with the United States Patent and Trademark Office via electronic filing through the United States Patent and Trademark Electronic Filing System on:

October 19, 2010.
Date of Deposit

Betty Scaletta
Name of Person Filing Correspondence

/Betty Scaletta/ 10-19-2010
Signature Date

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

8791 7590 09/24/2010

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Transmission

I hereby certify that this Fee(s) Transmittal is being submitted electronically via EFS Web on the date shown below.

Judith A. Szepesi	(Depositor's name)
/Judith Szepesi/	(Signature)
December 21, 2010	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	01/26/2010	Philippe Kahn	8689P027C	5414

TITLE OF INVENTION: HUMAN ACTIVITY MONITORING DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$0	$1510	12/27/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
COSIMANO, EDWARD R	2863	702-160000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Blakely, Sokoloff,
2 Taylor & Zafman, LLP
3 Judith A. Szepesi

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: DP Technologies, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Scotts Valley, California

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 02-2666 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Judith Szepesi/ Date December 21, 2010

Typed or printed name Judith A. Szepesi Registration No. 39,393

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal	
Application Number:	12694135
Filing Date:	26-Jan-2010
Title of Invention:	HUMAN ACTIVITY MONITORING DEVICE
First Named Inventor/Applicant Name:	Philippe Kahn
Filer:	Judith A. Szepesi/Joan Abriam
Attorney Docket Number:	8689P027C
Filed as Large Entity	

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1510**

Electronic Acknowledgement Receipt	
EFS ID:	9091841
Application Number:	12694135
International Application Number:	
Confirmation Number:	5414
Title of Invention:	HUMAN ACTIVITY MONITORING DEVICE
First Named Inventor/Applicant Name:	Philippe Kahn
Customer Number:	08791
Filer:	Judith A. Szepesi
Filer Authorized By:	
Attorney Docket Number:	8689P027C
Receipt Date:	21-DEC-2010
Filing Date:	26-JAN-2010
Time Stamp:	21:02:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1510
RAM confirmation Number	9100
Deposit Account	022666
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Issue Fee Payment (PTO-85B)	8689P027C_Issue_Fee_Payment.pdf	122982 8404459001f45516cd197029663b621b34df55ff	no	1
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	30399 1de03114b178f99d94a7e615abe385f9f8c11b2b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	153381		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known 12694135	
Application Number	~~Not yet assigned~~
Filing Date	Herewith
First Named Inventor:	Philippe Kahn
Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket Number	8689P027C

Sheet	2	of	4

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/E.C./		US-	6,539,336	3/25/2003	Vock, et al.	
/E.C./		US-	6,700,499	3/2/2004	Kubo et al	
/E.C./		US-	6,790,178	9/14/2004	Mault, et al.	
/E.C./		US-	6,813,582	11/2/2004	Levi et al.	
/E.C./		US-	6,823,036	11/23/2004	Chen	
/E.C./		US-	6,826,477	11/30/2004	Ladetto et al	
/E.C./		US-	6,836,744	12/28/2004	Asphahani, et al.	
/E.C./		US-	6,881,191	4/19/2005	Oakley, et al.	
/E.C./		US-	6,885,971	4/26/2005	Vock, et al.	
/E.C./		US-	6,898,550	5/24/2005	Blackadar, et al.	
/E.C./		US-	6,928,382	8/9/2005	Hong et al	
/E.C./		US-	6,941,239	9/6/2005	Unuma, et al.	
/E.C./		US-	6,959,259	10/25/2005	Vock, et al.	
/E.C./		US-	7,010,332	3/7/2006	Irvin et al	
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/E.C./		US-	7,158,912	1/20/2007	Vock, et al.	
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/E.C./		US-	7,171,331	1/30/2007	Vock, et al.	
/E.C./		US-	7,200,517	4/3/2007	Darley, et al.	
/E.C./		US-	7,212,943	5/1/2007	Aoshima, et al.	
/E.C./		US-	7,220,220	5/22/2007	Stubbs, et al.	
/E.C./		US-	7,297,088	11/20/2007	Tsuji, Tomoharu	
/E.C./		US-	7,334,472	2/26/2008	Seo et al	
/E.C./		US-	~~7,382,611~~ 7328611	2/12/2008	Klees, et al.	
/E.C./		US-	7,387,611	6/17/2008	Inoue et al.	
/E.C./		US-	7,457,719	11/25/2008	Kahn et al	

RL 10/22/10

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known 12694135	
Application Number	~~Not yet assigned~~
Filing Date	Herewith
First Named Inventor:	Philippe Kahn
Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket Number	8689P027C

Sheet	3	of	4

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/E.C./		US-	2002/0089425	7/11/2002	Kubo et al	
/E.C./		US-	2002/0109600	8/15/2002	Mault, James R.; et al.	
/E.C./		US-	2002/0151810	10/17/2002	Wong, Philip Lim-Kong; et al.	
/E.C./		US-	2003/0018430	1/23/2003	Ladetto et al	
/E.C./		US-	2003/0109258	6/12/2003	Mantyjarvi et al	
/E.C./		US-	2004/0225467	11/11/2004	Vock, Curtis A.; et al.	
/E.C./		US-	2005/0033200	2/10/2005	Soehren, Wayne A.; et al.	
/E.C./		US-	2005/0222801	10/6/2005	Wulff et al	
/E.C./		US-	2005/0232388	10/20/2005	Tsuji, Tomoharu	
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/E.C./		US-	2006/0020177	1/26/2006	Seo et al	
/E.C./		US-	2006/0136173	6/22/2006	~~Charles Whipple~~ Jr.; et al.	Case
/E.C./		US-	2006/0223547	10/5/2006	Chin et al	
/E.C./		US-	2007/0063850	3/22/2007	Devaul; Richard W.; et al.	
/E.C./		US-	2007/0067094	3/22/2007	Park et al	
/E.C./		US-	2007/0125852	6/7/2007	Rosenberg	
/E.C./		US-	2007/0142715	6/21/2007	Banet et al.	
/E.C./		US-	2009/0043531	2/12/2009	Kahn et al	
		US-				
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		US-				
		US-				
		US-				

RL 10/22/10

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Philippe Kahn, et al.	Examiner: Cosimano, Edward R.
Application No.: 12/694,135	Art Unit: 2863
Filed: January 26, 2010	Confirmation No.: 5414
For: HUMAN ACTIVITY MONITORING DEVICE	Date of NOA: September 24, 2010

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 C.F.R. § 1.312 (Amendment After Allowance)

Sir:

In Response to the Notice of Allowance mailed on September 24, 2010, the Applicant respectfully requests the Examiner to enter the following amendment.

Amendments to the Drawings begin on page 2 of this paper.

Remarks begin on page 3 of this paper.

CERTIFICATE OF ELECTRONIC FILING

I hereby certify that this correspondence is being deposited with the United States Patent and Trademark Office via electronic filing through the United States Patent and Trademark Electronic Filing System on:

October 19, 2010.
Date of Deposit

Betty Scaletta
Name of Person Filing Correspondence

/Betty Scaletta/ 10-19-2010
Signature Date

IN THE DRAWINGS

The attached sheets, which include Figures 1 and 3-9, replace the original sheets including Figures 1 and 3-9. The figures have been amended to improve the shading and/or character of text, lead lines and other features to improve readability. It is respectfully submitted that the proposed amendments to the drawings do not add new matter.

REMARKS

The enclosed is responsive to the Notice of Allowance mailed September 24, 2010. Applicants note that in the Notice of Allowance numerous objections to the drawings and detailed description were raised by the Examiner, most of which were resolved via an Examiner's Amendment. Those objections which were not resolved via the Examiner's Amendment are addressed in the present amendment.

In the Drawings

The Notice of Allowance has objected to originally filed drawings 1, 5, 6, 7 and 8 for failure to comply with one or more subsections of 37 CFR 1.84. The notice of allowance notes that for Figure 1, that shading and/or character of the text, lead lines and other symbols should be improved. The Notice of Allowance further notes that for Figures 5-8, text should not overlap with border lines. Accordingly, Figures 1 and 5-8 have been amended to improve clarity and shading of text, lead lines and/or other features of the drawings. Additionally, Figures 3-4 have also been amended to improve clarity and shading of text, lead lines and/or other features of these drawings. Replacement sheets including amended Figures 1 and 3-9 are attached hereto. No new matter has been added to the drawings.

Invitation for a telephone interview

The Examiner is requested to call the undersigned at (408) 720-8300 if there remains any issue with allowance of this case.

Charges To Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: October 19, 2010

/Benjamin A. Kimes/
Benjamin A. Kimes
Reg. No. 50,870

1279 Oakmead Parkway
Sunnyvale, CA 94085
408-720-8300

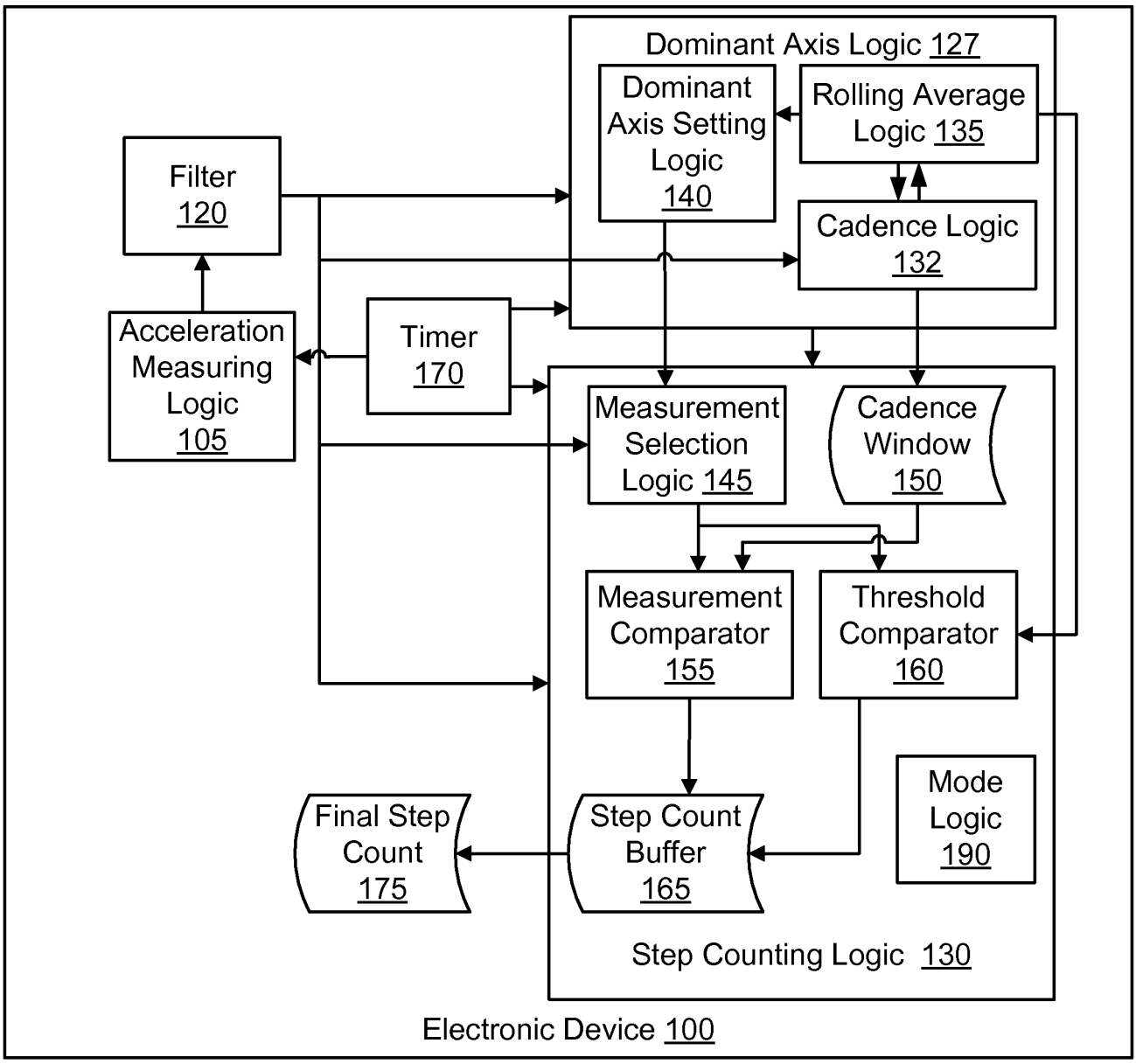
Dominant Axis Logic 127
Dominant Axis Setting Logic 140
Rolling Average Logic 135
Filter 120
Cadence Logic 132
Acceleration Measuring Logic 105
Timer 170
Measurement Selection Logic 145
Cadence Window 150
Measurement Comparator 155
Threshold Comparator 160
Mode Logic 190
Final Step Count 175
Step Count Buffer 165
Step Counting Logic 130
Electronic Device 100

Figure 1

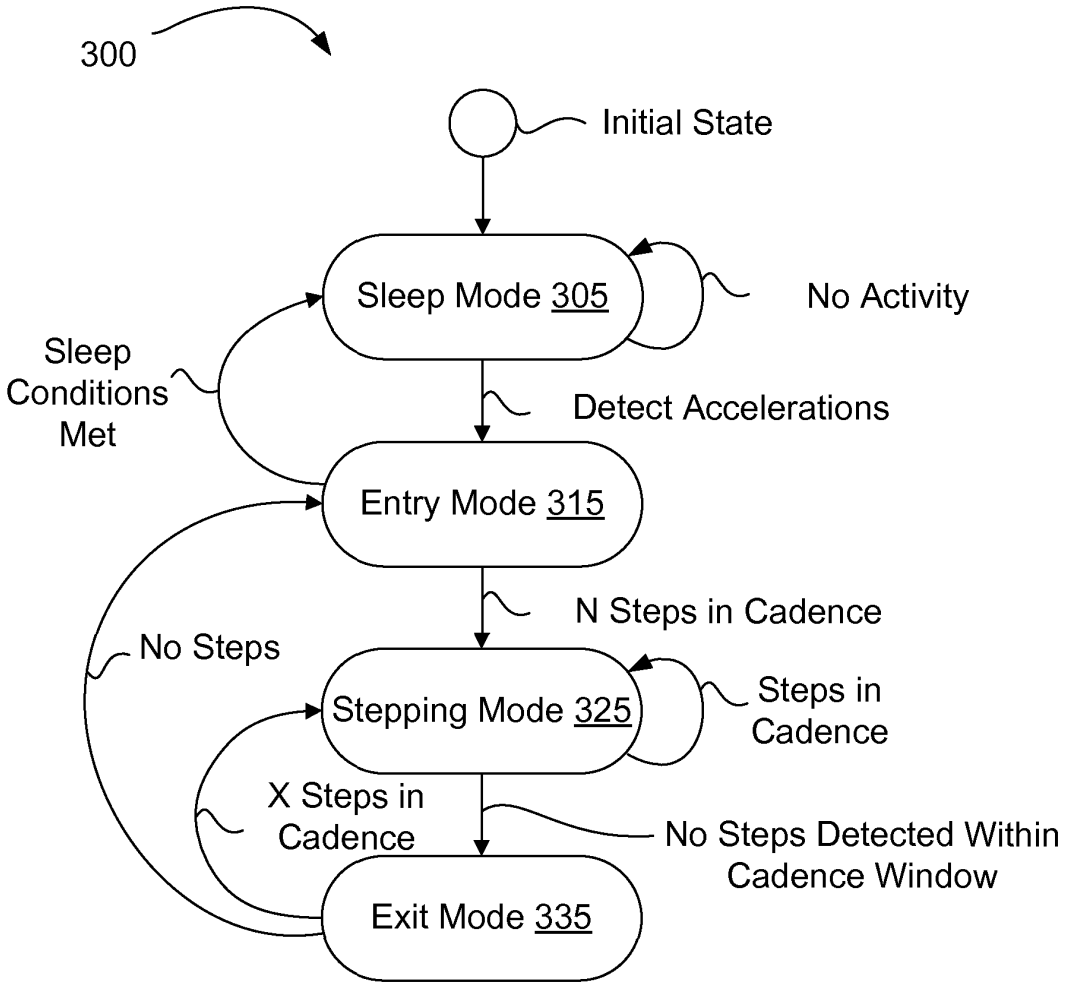
300
Initial State
Sleep Mode 305
No Activity
Sleep Conditions Met
Detect Accelerations
Entry Mode 315
N Steps in Cadence
No Steps
Stepping Mode 325
Steps in Cadence
X Steps in Cadence
No Steps Detected Within Cadence Window
Exit Mode 335

Figure 3

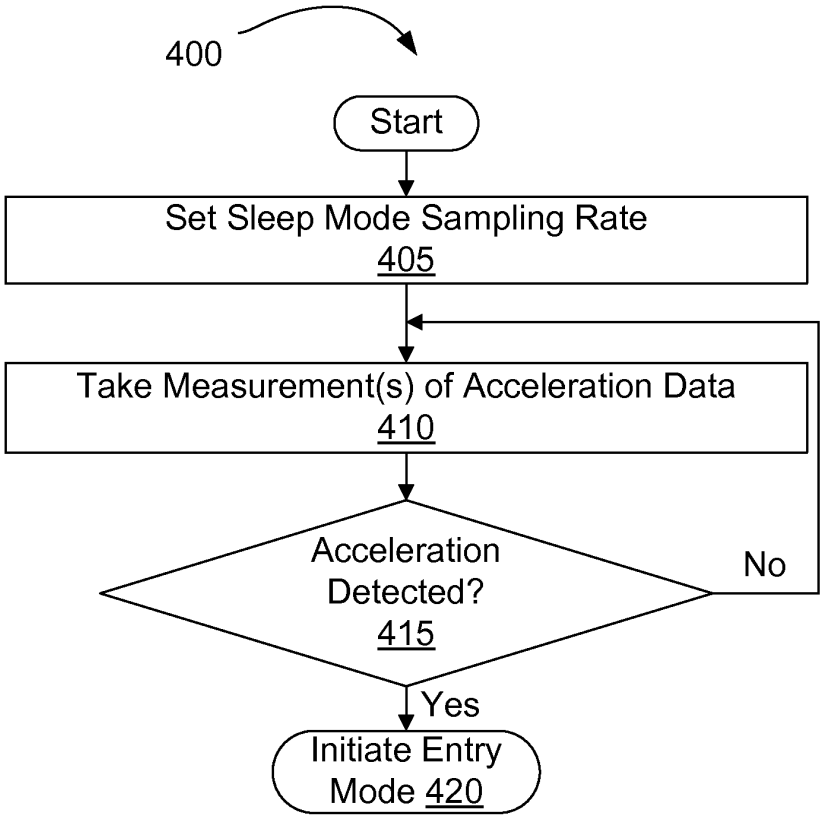
400
Start
Set Sleep Mode Sampling Rate
405
Take Measurement(s) of Acceleration Data
410
Acceleration
Detected?
415
No
Yes
Initiate Entry
Mode 420

Figure 4

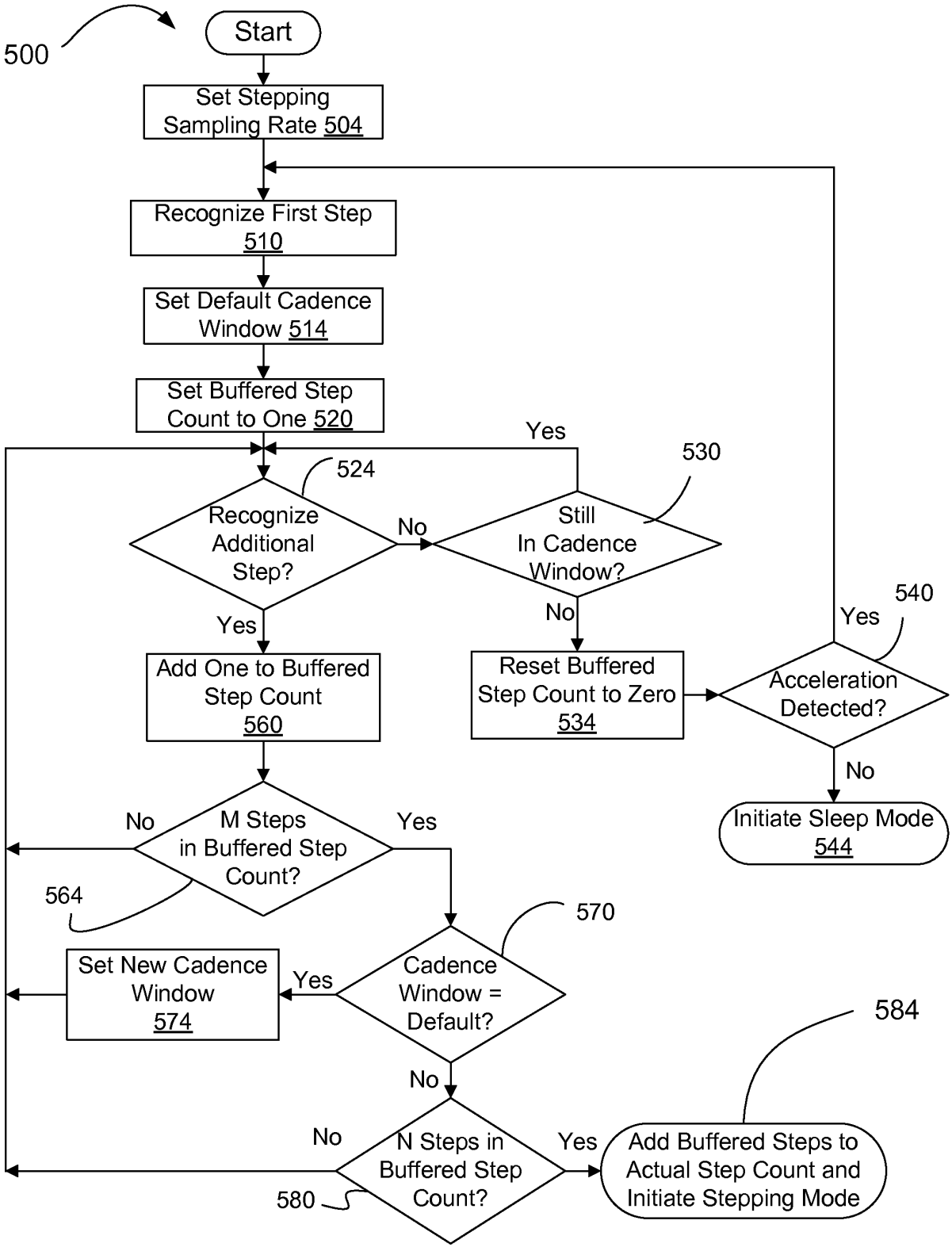
500
Start
Set Stepping Sampling Rate 504
Recognize First Step 510
Set Default Cadence Window 514
Set Buffered Step Count to One 520
524
Recognize Additional Step?
Yes
No
530
Still In Cadence Window?
Yes
No
Add One to Buffered Step Count 560
Reset Buffered Step Count to Zero 534
540
Acceleration Detected?
Yes
No
Initiate Sleep Mode 544
M Steps in Buffered Step Count?
No
Yes
564
570
Cadence Window = Default?
Yes
Set New Cadence Window 574
No
584
N Steps in Buffered Step Count?
No
Yes
580
Add Buffered Steps to Actual Step Count and Initiate Stepping Mode

Figure 5

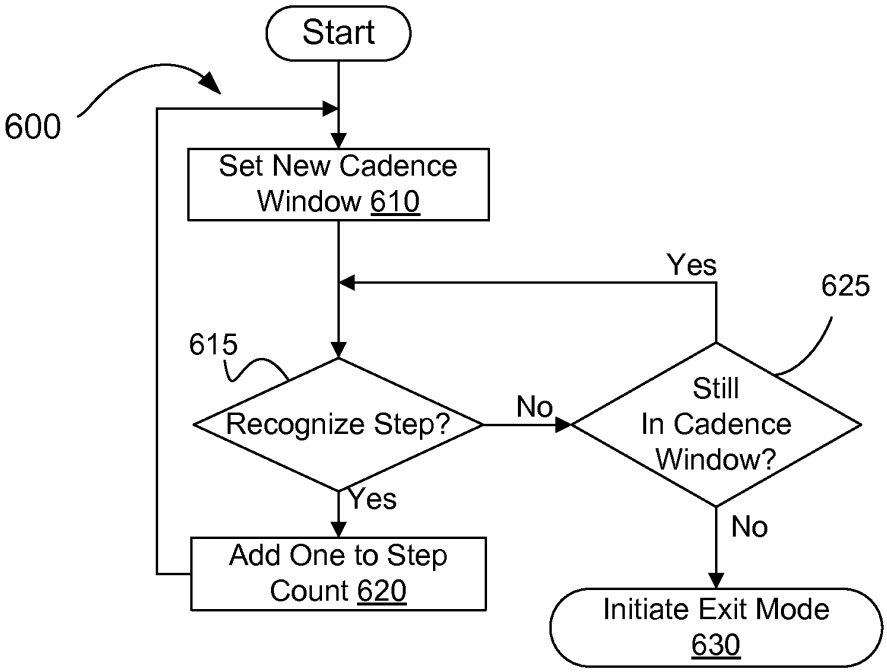
Start
600
Set New Cadence Window 610
Yes
625
615
Recognize Step?
No
Still In Cadence Window?
Yes
No
Add One to Step Count 620
Initiate Exit Mode 630

Figure 6

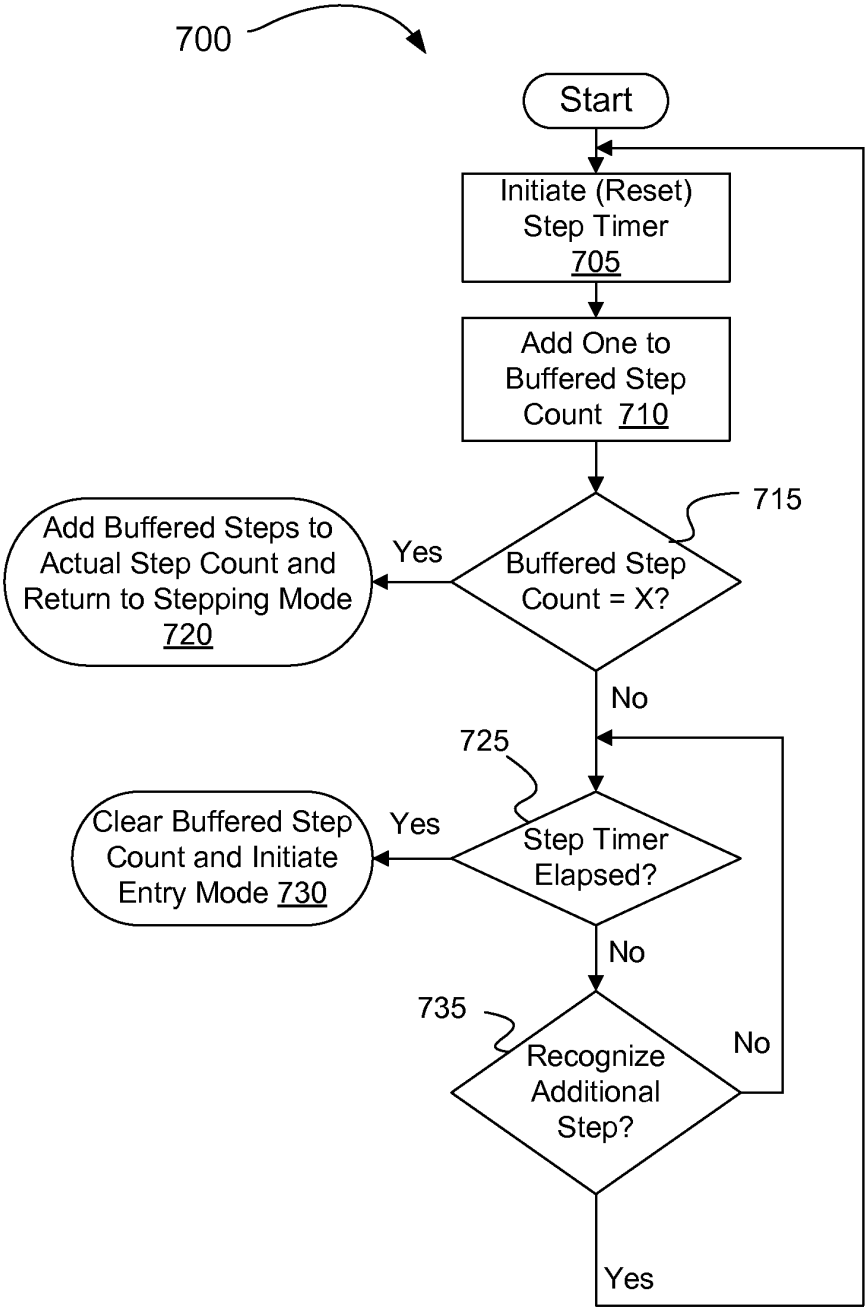
700
Start
Initiate (Reset) Step Timer 705
Add One to Buffered Step Count 710
715
Buffered Step Count = X?
Yes
Add Buffered Steps to Actual Step Count and Return to Stepping Mode 720
No
725
Step Timer Elapsed?
Yes
Clear Buffered Step Count and Initiate Entry Mode 730
No
735
Recognize Additional Step?
No
Yes

Figure 7

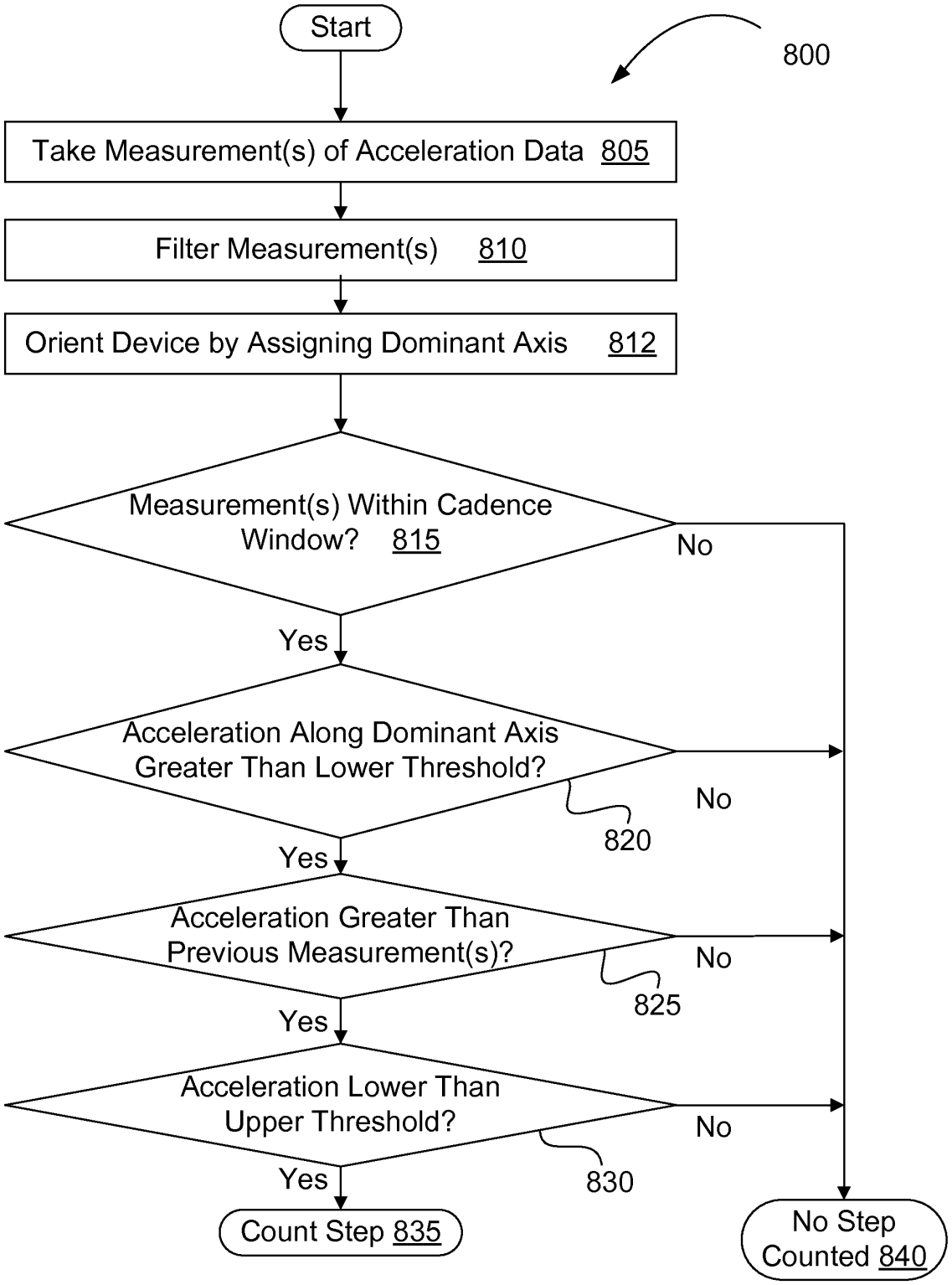
Start
800
Take Measurement(s) of Acceleration Data 805
Filter Measurement(s) 810
Orient Device by Assigning Dominant Axis 812
Measurement(s) Within Cadence Window? 815
No
Yes
Acceleration Along Dominant Axis Greater Than Lower Threshold?
No
820
Yes
Acceleration Greater Than Previous Measurement(s)?
No
825
Yes
Acceleration Lower Than Upper Threshold?
No
830
Yes
Count Step 835
No Step Counted 840

Figure 8

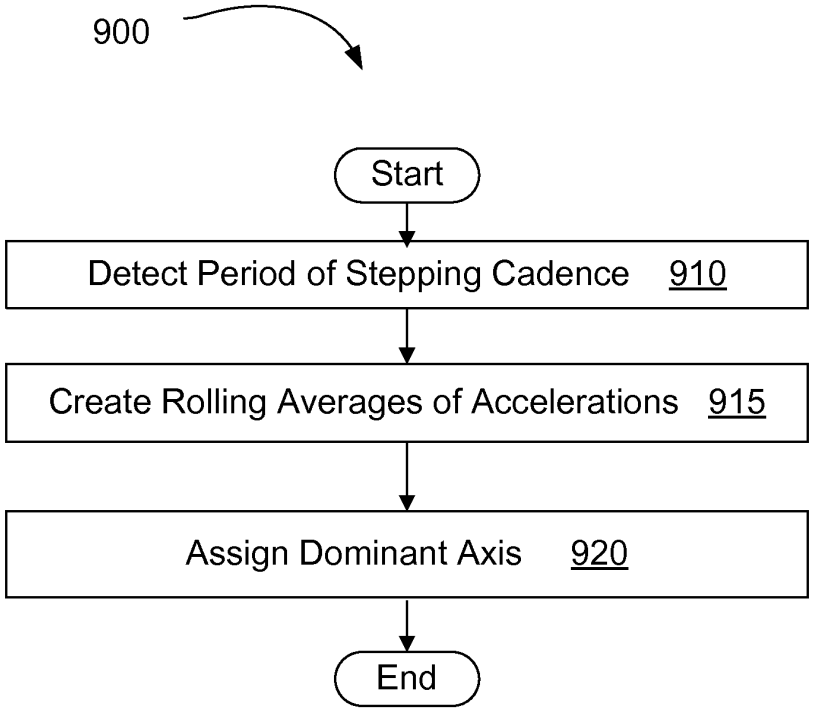
900
Start
Detect Period of Stepping Cadence 910
Create Rolling Averages of Accelerations 915
Assign Dominant Axis 920
End

Figure 9

Electronic Acknowledgement Receipt	
EFS ID:	8658411
Application Number:	12694135
International Application Number:	
Confirmation Number:	5414
Title of Invention:	HUMAN ACTIVITY MONITORING DEVICE
First Named Inventor/Applicant Name:	Philippe Kahn
Customer Number:	08791
Filer:	Benjamin Kimes/Betty Scaletta
Filer Authorized By:	Benjamin Kimes
Attorney Docket Number:	8689P027C
Receipt Date:	19-OCT-2010
Filing Date:	26-JAN-2010
Time Stamp:	20:28:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		8689P027C_312Amendment_10-19-10.pdf	29133 07ab72fa9765884043126e34f3ab7ed3f6272f3d	yes	4

	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment after Notice of Allowance (Rule 312)		1	1	
	Drawings-only black and white line drawings		2	2	
	Applicant Arguments/Remarks Made in an Amendment		3	4	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	8689P027C_ReplacementFigures_10-19-10.pdf	42903 98306df21ca15bbe2bc35984f0bba124552cc5c0	no	8
Warnings:					
Information:					
		Total Files Size (in bytes):	72036		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

8791 7590 09/24/2010

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
COSIMANO, EDWARD R	
ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 09/24/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	01/26/2010	Philippe Kahn	8689P027C	5414

TITLE OF INVENTION: HUMAN ACTIVITY MONITORING DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$0	$1510	12/27/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

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If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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Alexandria, Virginia 22313-1450
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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

8791 7590 09/24/2010

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

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Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	01/26/2010	Philippe Kahn	8689P027C	5414

TITLE OF INVENTION: HUMAN ACTIVITY MONITORING DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$0	$1510	12/27/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
COSIMANO, EDWARD R	2863	702-160000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

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3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/694,135	01/26/2010	Philippe Kahn	8689P027C	5414

8791 7590 09/24/2010

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
COSIMANO, EDWARD R	
ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 09/24/2010

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)	
	12/694,135	KAHN ET AL.	
	Examiner	Art Unit	
	Edward R. Cosimano	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the application filed on 26 January 2010 and the Examiner's Amendment*.

2. ☒ The allowed claim(s) is/are *21-31*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 1/26/10; 5/27/10
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other *Approved Drawing correction*.

1. EXAMINER'S COMMENT

1.1 When preparing this Office action the Examiner considers the instant application to include:

A) the Oath/Declaration which was filed on 26 January 2010 and that is acceptable to the Examiner;

B) the content of the Abstract which was filed on 26 January 2010 and that is acceptable to the Examiner;

C) figures 1, 2, 3, 4, 5, 6, 7, 8 & 9 of the set of drawings containing 9 sheets of 9 figures comprising figures 1, 2, 3, 4, 5, 6, 7, 8 & 9 as presented in the set of drawings filed on 26 January 2010 where the content of figures 3, 4 & 9 of the above set of drawings is acceptable to the Examiner;

D) the written description as filed on 26 January 2010 and amended on 26 January 2010; and

E) the set of amended claims as filed on 26 January 2010; and

F) the NON-Publication request filed on 26 January 2010.

2. BENEFIT OF AN EARLIER FILING DATE

2.1 Applicant's claim for the benefit of an earlier filing date pursuant to 35 U.S.C. 120 is acknowledged.

3. PRIOR ART FROM EARLIER APPLICATIONS

3.1 The Examiner has considered the prior art cited in the applications for which Applicant has claimed the benefit of an earlier filing date pursuant to 35 U.S.C. 120.

3.1.1 If Applicant wishes any of the prior art that was cited in each of the base applications but that has not been cited during the prosecution of the instant application to appear on any Patent grated on the instant application, then Applicant must provide a properly completed PTO-1449 containing proper citations of the prior art that Applicant wishes to appear on any Patent that may be granted on the instant application.

4. OBJECTIONS TO THE DRAWINGS

4.1 The set of drawings filed on 26 January 2010 is objected to because:

A) the shading and/or character of the lines that have been used in order to form the text, lead lines and other features of the invention that have been depicted in figure 1 as the drawings

appear within the instant file wrapper, lacks sufficient contrast and clarity for each of the depicted text, lead lines and other features in order to permit ready reproduction as required by 37 CFR 1.84(l) for the text, lead lines and other symbols/features and reference legends that are permitted in the drawings by 37 CFR 1.84(m,n,o,p,q,r).

B) the drawings and/or the written description are inconsistent and fail to comply with 37 CFR 1.84(p)(4,5) and therefore are confusing. In this regard, it is noted that:

(1) Applicant's references to either "motion cycle graph 201" or "first axis 203" or "second axis 205" or "third axis 207" or "motion cycle 210" in paragraph number 24 of the written description are confusing and inconsistent because as can be seen in figure 2 and from the context of the written description in paragraph number 24, Applicant has not used reference legends 201 or 210 in order to designate a "graph" or a "cycle" in figure 2 and Applicant has not used reference legends 203 or 205 or 207 in order to designate what one of ordinary skill at the time the invention was made would fairly and reasonably recognize as an "axis" as described in paragraph number 24. In view of this, Applicant references to "motion cycle graph 201" or "first axis 203" or "second axis 205" or "third axis 207" or "motion cycle 210" in paragraph number 24 are confusing and inconsistent references to reference legends in the drawings and/or written description that are not consistent with the requirements of 37 CFR 1.84(p)(4,5).

(2) Applicant's lack of an explicit reference to reference legends 200 & 215 of figure 2 and the Applicant's references to "motion cycle graph 201" or "motion cycle 210" in paragraph number 24 of the written description are confusing and inconsistent, because as can be seen in figure 2 and from the context of the written description Applicant:

(a) has used reference legend 200 in order to generally designate the graph depicted in figure 2 but Applicant has not explicitly referenced reference legend 200 within the written description;

(b) has used reference legend 215 in order to generally designate a cycle of one of the signal traces depicted in figure 2 but Applicant has not explicitly referenced reference legend 215 within the written description; and

(c) has not used reference legends 201 or 210 in order to designate any feature of the invention that has been depicted in figure 2 as described in paragraph number 24.

In view of this, Applicant's use of reference legends 200 & 215 in figure 2 and Applicant's references to "motion cycle graph 201" or "motion cycle 210" in paragraph number 24 of the written description are confusing and inconsistent references to reference legends which are not consistent with the requirements of 37 CFR 1.84(p)(4,5).

(3) Applicant's references to "motion cycle graph 201" "motion cycle 210", "cadence logic 135" in paragraph number 24 are confusing and inconsistent because as can be seen in figures 1 & 2 and from the context of the written description Applicant has:

(a) used reference legend 132 in figure 1 and in paragraph numbers 20, 22, 33, 34 & 35 in order to designate the "cadence logic 132";

(b) used reference legend 135 in figure 1 and in paragraph numbers 20, 22, 25, 33, 34, 35, 37 & 84 in order to designate the "rolling average logic 135"; and

(c) not used reference legends 201 or 210 in order to designate a "graph" or a "cycle" within figure 2 as described in paragraph number 24.

In view of this, Applicant has used reference legends 132, 135, 201 & 210 multiple times in a confusing and inconsistent manner in the drawings and/or written description in order to designate various different depicted features of the invention which is not consistent with the requirements of 37 CFR 1.84(p)(4,5).

(4) Applicant's reference to "measurement buffer 125", in paragraph number 39 of the written description is confusing and inconsistent because as can be seen in figure 1 and from the context of paragraph number 39 of the written description Applicant has not used reference legend "125" or reference legend "measurement buffer" to designate any of the depicted features of the invention that have been depicted in figure 1. In view of this, Applicant's reference to "measurement buffer 125" in paragraph number 39 is a confusing and inconsistent reference which is not consistent with the requirements of 37 CFR 1.84(p)(4,5).

(5) Applicant's placement of the reference legend "YES" to the left of block 524 in figure 5 and Applicant's second reference to block 540 in paragraph number 66 of the

written description are confusing and inconsistent because as can be seen in figure 5 and from the context of the written description in paragraph numbers 64-67, Applicant has:

(a) described the depicted flow path from block 524 to block 560 as being taken when and "Additional Step" has been "Recognize" see the context of paragraph numbers 64-67 of the written description;

(b) used reference legend 524 in order to designate the block that has been entitled as "Recognize Additional Step?" and not reference legend 540 as described in the context of paragraph numbers 64, 65 & 67 of the written description; and

(c) used reference legend 540 in order to designate the block that has been entitled as "Acceleration Detected?" as described in the context of paragraph number 66 of the written description.

In view of this, Applicant's has referenced reference legend 524 & 540 and the flow of the procedure of figure 5 in a confusing and inconsistent manner in the drawings and/or written description in order to designate various different depicted features of the invention which is not consistent with the requirements of 37 CFR 1.84(p)(4,5).

In view of the above, the written description describes one or more features of the invention and/or the drawings depict one or more features of the invention in an inconsistent manner, then the drawings and/or the written description are inconsistent, confusing and fail to comply with the requirements of 37 CFR 1.84(p)(4,5) and therefore do not aid in the understanding of the invention as required by 37 CFR 1.81(a,b).

C) Applicant's use of reference legends as titles for:

(1) decision blocks 524, 530, 564, 570 & 580 of the process that has been depicted in figure 5;

(2) decision block 625 of the process that has been depicted in figure 6;

(3) decision blocks 715 & 735 of the process that has been depicted in figure 7; and

(4) decision blocks 815 & 820 of the process that has been depicted in figure 8;

which cross the lines that function as the outlines of each of the diamond symbols that have been used in order to illustrates these blocks is not consistent with the requirements of 37 CFR 1.84(p)(3).

4.1.1 Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the Examiner, the Applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. OBJECTIONS TO THE WRITTEN DESCRIPTION

5.1 The disclosure is objected to because of the following informalities:

A) Applicant must update the application data with the current status of each reference application, see for example:

(1) patented application number 11/644,455 now U.S. Patent Number 7,653,508 as mentioned in the paragraph beginning at page 2, line 2, as amended on 26 January 2010; and

(2) the unidentified application in paragraph number 20 and note further that because Applicant has filed to clearly and explicitly identify the referenced application, by for example title, filing date, attorney docket number, then this requirement and the incorporation of the unidentified application may constitute new matter and hence NO NEW MATTER should be entered.

Note the related changes suggested below by the Examiner.

B) the following errors and/or inconsistencies between the drawings filed on 26 January 2010 and the written description have been noted:

(1) the drawings and/or the written description are inconsistent and fail to comply with 37 CFR 1.84(p)(4,5) and therefore are confusing, for the reasons noted above in

section 4.1(B), as required by 37 CFR 1.84(p)(4,5). Since the written description describes one or more features of the invention that do not appear in any figure of the drawings as being depicted in the drawings and/or the written description does not describe one or more features of the invention that do appear in one or more figures of the drawings, then drawings and/or the written description are confusing, inconsistent and fail to comply with 37 CFR 1.84(p)(4,5) and therefore do not aid in the understanding of the invention as required by 37 CFR 1.81(a,b).

(1.1) in view of the above objections, the Examiner has proposed some changes to the written description below.

C) Applicant use of "(." is paragraph number 28 of the written description is confusing because it is unclear what Applicant intends the "(." to be a reference to in this paragraph and hence it is suggested that the "(." be deleted from paragraph number 28 as suggested below by the Examiner.

5.1.1 Appropriate correction is required.

6. EXAMINER'S AMENDMENT

6.1 An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Please amend the drawings as indicated in the attached appendix entitled "AMENDMENTS TO THE DRAWINGS" beginning on page XX.

Please amend the written description as indicated in the attached appendix entitled "AMENDMENTS TO THE WRITTEN DESCRIPTION" beginning on page XX.

6.1.1 This Examiner's amendment makes the same corrections to the written description and drawings as were made by Applicant is response to similar objections in parent Application serial number 11/644,455 with the exceptions of (1) the objection to the drawing set forth above in section 4.1(C); and (2) the obvious correction that corrects the objection to the written description and drawings set forth above in section 4.1(B)(5).

7. REASONS FOR ALLOWANCE

7.1 The following is a statement of reasons for the indication of allowable subject matter:

A) the prior art, for example:

(1) either Richardson et al (5,976,083 or 6,135,951) or Ebeling et al (6,145,389) or Tsuji (2005/0232388 or 2005/0238132 or 7,169,084 or 7,297,088) or Darley (6,611,789 or 2007/0061105 or 2007/0208531 or 2010/0057398) or Park et al (2007/0067094) disclose a machine/process that provides the useful and beneficial function of monitoring the physical fitness activities of an user. To monitor the physical fitness activities of the user, an accelerometer is used in order to monitor the acceleration of the user during a physical fitness activity of the user. The measured acceleration of the user during a physical fitness activity is then suitably processed by being analyzed or evaluated in order to: (1a) detect any variation in the measured acceleration that would represent a particular physical fitness activity of the user; and (1b) to make a more accurate determination of the user's steps or strides in order to determine an accurate measurement of the user's step or stride distance for a particular physical fitness activity. In this manner the total distance that has been traveled by the user during a particular physical fitness activity may more accurately be determined based on the user's step or stride and the total distance traveled by the user during a step or stride. Where in either Darley (6,611,789 or 2007/0061105 or 2007/0208531 or 2010/0057398) when a step is not detected with in a predetermined period/interval of time and then wakes the pedometer up when a step is detected.

(2) either Sakuria et al (6,369,794) or Kubo et al (2002/0089425 or 6,700,499) or Ladetto et al (2003/0018430 or 6,826,477) disclose a machine/process that provides the useful and beneficial function of determining an user's action or motion in which the time variation of a measured acceleration, representing the user's action or motion, is evaluated or analyzed in order to determine the user's action or motion.

(3) either Seo et al (2006/0020177 or 7,334,472) disclose a machine/process that provides the useful and beneficial function of placing an acceleration based pedometer machine/process into a sleep or low power mode in which the sampling frequency is changed, when a step is not detected with in a predetermined period/interval of time and then wakes the pedometer up when a step is detected.

B) however, the prior art does not fairly teach or suggest in regard to claim 21 a process in claim 21 that provides the useful and beneficial function of placing a mobile device in a sleep or low activity mode by providing actions in claim 21 that perform at least the functions of:

(1) using an inertial sensor within the mobile device in order to detect motion of the mobile device;

(2) using the mobile device in order to determine if the motion that has been detected by the inertial sensor has a signature that is indicative of an user activity that the mobile device is configured to monitor; and

(3) entering the mobile device into a sleep mode when the motion that has been detected by the inertial sensor does not has a signature that is indicative of an user activity that the mobile device is configured to monitor.

Claims 22-24, which depend from claim 21, are allowable over the prior art for the same reason.

C) however, the prior art does not fairly teach or suggest in regard to claim 25 a process in claim 25 that provides the useful and beneficial function of setting an appropriate step cadence window for a mobile device by providing actions in claim 25 that perform at least the functions of:

(1) receiving from an accelerometer within the mobile device acceleration data/information that meets a stepping criteria;

(2) incrementing a step count by using the acceleration data/information that meets a stepping criteria; and

(3) setting a step cadence window in order for the mobile device to monitor the next step to be:

(3a) a default step cadence window when the step count is below a step count threshold; or

(3b) a default step cadence window when the step cadence of the current user does not match the step cadence profile of an user profile; and

(3c) a dynamic step cadence window when the step count is at or above the step count threshold.

Claims 26-31, which depend from claim 25, are allowable over the prior art for the same reason.

8. RELEVANT ART OF INTEREST

8.1 The Examiner has cited prior art of interest, for example:

A) either Kahn et al (2009/0043531 or 2009/0234614 or 2009/0319221 or 7,647,196 or 2010/0056872 or 7,753,861) are publication of a related application with at least one common inventor and a latter effective date.

9. CONCLUSION

9.1 Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Edward R. Cosimano whose telephone number is 571-272-0571. The Examiner can normally be reached on 571-272-0571 from 7:30am to 4:00pm.

9.2 If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Drew Dunn, can be reached on 571-2722312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9.3 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ERC
09/11/2010

/Edward Cosimano/
Primary Examiner Unit 2863

AMENDMENTS TO THE DRAWINGS

Please amend the drawings by:

(1) moving the reference legend "YES" to the left of block 524 to below block 524 as indicated on the attached approved drawing correction.

AMENDMENTS TO THE WRITTEN DESCRIPTION

Please amend the written description by replacing:

(1) the paragraph at page 2, beginning at line 2, as amended on 26 January 2010, with:

The present patent application is a continuation of U.S. Application No. 11/644,455, filed on December 22, 2006, now U.S. Patent No. 7,653,508.

(2) paragraph number 20 with:

[0020] Filtered measurement data may be passed on to the dominant axis logic 127 and the step counting logic 130. In one embodiment, the dominant axis logic 127 includes a cadence logic 132, a rolling average logic 135, and a dominant axis setting logic 140. In an alternative embodiment, more or fewer logics may be used to determine a dominant axis. ~~One embodiment of implementing dominant axis assignment may be found in co-pending application U.S. Serial No. XXX, which is incorporated herein by reference.~~ Alternative means of identifying a dominant axis may be used in other embodiments.

(3) paragraph number 24, with:

[0024] Figure 2 illustrates an exemplary motion cycle graph [[201]] 200 that measures time versus acceleration, in accordance with one embodiment of the present invention. The exemplary motion-cycle graph [[201]] 200 shows acceleration data taken with a single tri-axis inertial senor. The acceleration at a given period of time is represented for a first axis 203 of the inertial sensor, a second axis 205 of the inertial sensor, and a third axis 207 of the inertial sensor. In one embodiment, the cadence logic [[135]] 132 of Figure 1 analyzes the acceleration along the first axis 203, second axis 205 and third axis 207 to detect a motion cycle. Once a motion cycle is detected, a period of the motion cycle is determined, and a cadence of the motion cycle is determined. Figure 2 shows an exemplary period of a motion cycle [[201]] 215 for the third axis 207, the period being approximately 0.6 seconds. The same period can also be seen to a lesser degree in the second axis 205 and the first axis 203. The corresponding cadence to the motion cycle is approximately one hundred motion cycles per minute.

(4) paragraph number 28 with:

[0028] Returning to Figure 2, cadence windows may be used to count steps until an expected step is not encountered. In one embodiment, new cadence windows are determined periodically. In one embodiment, the cadence window is a dynamic cadence window that continuously updates as a user's cadence changes. For example, using a dynamic cadence window, a new cadence window length may be set after each step. [[(.]] The cadence window minimums may be determined by subtracting a value from the stepping period, and the cadence window maximums may be determined by adding a value to the stepping period. In one embodiment, the cadence window maximums are preset, and the cadence window minimums are updated after each step is counted. In one embodiment, the cadence window minimums are preset, and the cadence window maximums are updated after each step is counted. In one embodiment, both the cadence window minimums and cadence window maximums are updated when a step is counted. In one embodiment, the current cadence window minimum is determined by subtracting 200 ms from the current stepping cadence period. In one embodiment, the cadence window minimum has a minimum value of 240 ms.

(5) paragraph number 39 with:

[0039] Returning to Figure 1, the step counting logic 130 may include a measurement selection logic 145, a cadence window 150, a measurement comparator 155, a threshold comparator 160, a step count buffer 165, and a mode logic 190. The measurement selection logic 145 may determine which measurements from the measurement buffer [[125]] to use to determine if a step has occurred. In one embodiment, the measurement selection logic 145 may monitor accelerations relative to the dominant axis, and select only those measurements with specific relations to the dominant axis for measurement. For example, only accelerations that are approximately parallel to the dominant axis may be selected, or alternatively, only accelerations that are approximately perpendicular to the dominant axis may be selected. In one embodiment, the measurement selection logic 145 selects only measurements of acceleration data along the dominant axis. In alternative embodiments, measurements of acceleration data along other axes may also be used. In one embodiment, measurements of acceleration along only the other axes are used.

(6) paragraph number 66 with:

[0066] At block 540, processing logic determines whether any relevant acceleration is detected. If no relevant acceleration is detected, then sleep mode is initiated (block 544). If some relevant acceleration is detected, then processing logic returns to block 510 to await recognition of another first step. If at block [[540]] 524 an additional step was recognized, the process continues to block 560.

Notice of References Cited	Application/Control No. 12/694,135	Applicant(s)/Patent Under Reexamination KAHN ET AL.	
	Examiner Edward R. Cosimano	Art Unit 2863	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,611,789	08-2003	Darley, Jesse	702/160
*	B	US-2007/0061105	03-2007	Darley et al.	702/182
*	C	US-2007/0208531	09-2007	Darley et al.	702/142
*	D	US-7,328,611	02-2008	Klees et al.	73/290V
*	E	US-2009/0234614	09-2009	Kahn et al.	702/141
*	F	US-2009/0319221	12-2009	Kahn et al.	702/141
*	G	US-7,647,196	01-2010	Kahn et al.	702/149
*	H	US-7,653,508	01-2010	Kahn et al.	702/160
*	I	US-2010/0056872	03-2010	Kahn et al.	600/300
*	J	US-2010/0057398	03-2010	Darley et al.	702/160
*	K	US-7,753,861	07-2010	Kahn et al.	600/595
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12694135	KAHN ET AL.
	Examiner	**Art Unit**
	Edward R Cosimano	2863

ORIGINAL		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
702	160	G 0 1 C 22 / 00	
		G 0 6 F 19 / 00	

CROSS REFERENCE(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
377	24.2					
702	97					

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
	2		18												
	3		19												
	4		20												
	5	1	21												
	6	2	22												
	7	3	23												
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	11	7	27												
	12	8	28												
	13	9	29												
	14	10	30												
	15	11	31												
	16														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	11	
/Edward R Cosimano/ Primary Examiner.Art Unit 2863	09/11/2010	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	21	5

U.S. Patent and Trademark Office — Part of Paper No. 20100911

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BIB DATA SHEET

CONFIRMATION NO. 5414

SERIAL NUMBER	FILING or 371(c) DATE / RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/694,135	01/26/2010	702	2863	8689P027C

APPLICANTS

Philippe Kahn, Aptos, CA;
Arthur Kinsolving, Santa Cruz, CA;
Mark Andrew Christensen, Santa Cruz, CA;
Brian Y. Lee, Aptos, CA;
David Vogel, Santa Cruz, CA;

**** CONTINUING DATA ***************************

This application is a CON of 11/644,455 12/22/2006 PAT 7,653,508 YES /ERC/

**** FOREIGN APPLICATIONS *************************** NONE /ERC/

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

02/05/2010

Foreign Priority claimed	❑ Yes ☑ No	❑ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	❑ Yes ☑ No		CA	9	11	2
Verified and Acknowledged	/EDWARD R COSIMANO/ Examiner's Signature	Initials				

ADDRESS

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040
UNITED STATES

TITLE

Human Activity Monitoring Device

FILING FEE RECEIVED		
1090	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

BIB (Rev. 05/07).

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12694135	KAHN ET AL.
	Examiner	Art Unit
	Edward R Cosimano	2863

SEARCHED			
Class	Subclass	Date	Examiner
33	700, 701	09/10/2010	ERC
73	1.01, 1.37, 1.38, 1.75, 1.76, 1.77, 1.78, 1.79, 1.81	09/10/2010	ERC
377	1, 13, 15, 17, 20, 24, 24.1, 24.2	09/10/2010	ERC
702	1, 85, 97, 127, 141, 150, 155, 158, 160, 187, 189	09/10/2010	ERC

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Name Search; Continuity Check	09/09/2010	ERC
EAST (USOCR, USAPT, US-PGPUB, DERWENT, EPO, FPRS, JPO, IBM-TDB)	09/10/2010	ERC

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
377	1, 19, 24, 24.2	09/10/2010	ERC
702	1, 85, 97, 127, 155, 158, 160	09/10/2010	ERC

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	12/694,135
				Filing Date	January 26, 2010
				First Named Inventor:	Philippe Kahn
				Art Unit	2863
				Examiner Name	Not yet assigned
Sheet	1	**of**	2	Attorney Docket Number	8689P027C

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/E.C./		US-	6,975,959	12/13/2005	Dietrich et al	
/E.C./		US-	7,353,112	4/1/2008	Choi et al	
/E.C./		US-	7,526,402	4/28/2009	Tenanhaus et al	
/E.C./		US-	2003/0139692	7/24/2003	Barrey et al	
/E.C./		US-	2006/0100546	5/11/2006	Silk, Jeffrey E	
/E.C./		US-	2007/0082789	4/12/2007	Nissila et al	
		US-				
		US-				
		US-				
		US-				
		US-				
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		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

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Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	12/694,135
(use as many sheets as necessary)				Filing Date	January 26, 2010
				First Named Inventor:	Philippe Kahn
				Art Unit	2863
				Examiner Name	Not yet assigned
Sheet	2	**of**	2	Attorney Docket Number	8689P027C

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
/E.C./		"Wearable Health Reports," Technology Review, February 28, 2006, http://www.techreview.com/printer_friendly_article_aspx?id+16431, 3/22/2007, 3 pages	

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12694135	KAHN ET AL.
	Examiner	Art Unit
	Edward R Cosimano	2863

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/11/2010								
	1	-								
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8	28	=								
9	29	=								
10	30	=								
11	31	=								

Inventor Information for 12/694135

Inventor Name	City	State/Country
KAHN, PHILIPPE	APTOS	CALIFORNIA
KINSOLVING, ARTHUR	SANTA CRUZ	CALIFORNIA
CHRISTENSEN, MARK ANDREW	SANTA CRUZ	CALIFORNIA
LEE, BRIAN Y.	APTOS	CALIFORNIA
VOGEL, DAVID	SANTA CRUZ	CALIFORNIA

Appln Info | Contents | Petition Info | Atty/Agent Info | Continuity/Reexam | Foreign Data | **Inventors** | Address | Fees | Post Info | Pre Grant Pub

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09 September 2010

Continuity/Reexam Information for 12/694135

Parent Data
12694135, filed 01/26/2010 is a continuation of 11644455, filed 12/22/2006 ,now U.S. Patent #7653508 and having 1 RCE-type filing therein

Child Data

Appln Info | Contents | Petition Info | Atty/Agent Info | Continuity/Reexam | Foreign Data | Inventors | Address | Fees | Post Info | Pre Grant Pub

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Foreign Information for 12/694135

No Foreign Data

Appln Info | Contents | Petition Info | Atty/Agent Info | Continuity/Reexam | **Foreign Data** | Inventors | Address | Fees | Post Info | Pre Grant Pub

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09 September 2010

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	851753	(motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise) near4 (inertial or gyro or gyroscope or accel or acceler$1meter or mem$1 or micro$1electro$1mechanical or monit$1r or monitoring or detecting or detect$1r or sensing or sens$1r or transducer or sample or sampled or sampling or sampl$1r or meter or metering or gauge or gauging or gage or gaging or gag$1r)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:10
2	BRS	L2	1074220	(motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near3 (profile or shape or trend or pattern or sequence or signature or curve or line or function or eq or equ or equation)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:10
3	BRS	L3	102904	(2 adj5 (motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise)) or ((motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise) adj5 2)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:10
4	BRS	L4	148092	(sleep or sleeping or wait or inactive or dormant) near3 (state or mode or period or interval)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:32

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6	BRS	L6	1059	1 and 3 and 5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:33
7	BRS	L7	1788265	(motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near4 (criteria or criterion or criterium or setpoint or point or level or threshold or limit or requirement or tolerance or window or range or band or qualify or qualified or qualifying or qualification or standard or bench or benchmark or baseline or base or reference)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:34
8	BRS	L8	113150	7 near6 (inertial or gyro or gyroscope or accel or acceleration or acceler$1meter or mem$1 or micro$1electromechanical or monit$1r or monitoring or detecting or detect$1r or sensing or sens$1r or transducer or sample or sampled or sampling or sampl$1r or meter or metering or gauge or gauging or gage or gaging or gag$1r)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:38

	Type	L #	Hits	Search Text	DBs	Time Stamp
9	BRS	L9	537914	(count or counted or counting or counter or total or number or sum or register or buffer) near2 (motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:39
10	BRS	L10	87471	9 near6 (inc or increase or increased or increasing increment or incrementing or add or added or adding or addition or plus or pluss or sum or summed or summing or summation or dec or decrease or decreased or decreasing or decrement or sub or subtract or subtracted or subtracting or subtraction)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:39
11	BRS	L11	3244	9 same (((count or motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near2 (criteria or criterion or criterium or setpoint or point or level or threshold or limit or requirement or tolerance or window or range or band or qualify or qualified or qualifying or qualification or standard or bench or benchmark or baseline or base or reference)) near5 (low or lower or lowest or bottom or less or below or beneath or underneath))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:50

	Type	L #	Hits	Search Text	DBs	Time Stamp
12	BRS	L12	76516	(7 or cadence) near4 (default or pre$1set or predetermined)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:52
13	BRS	L13	664	11 and 12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 17:59
14	BRS	L14	6164	9 same (((count or motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near2 (criteria or criterion or criterium or setpoint or point or level or threshold or limit or requirement or tolerance or window or range or band or qualify or qualified or qualifying or qualification or standard or bench or benchmark or baseline or base or reference)) near5 (high or higher or highest or upper or top or greater or above or outside or exceed or exceeded or exceeding))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:01
15	BRS	L15	57368	(7 or cadence) near4 (dynamic or changing or chang$1able or altering or alter$1able or modifying or modif$2able or adjusting or adjust$1able or selecting or select$1able or shifting or shift$1able or updating or updat$2able)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:01

	Type	L #	Hits	Search Text	DBs	Time Stamp
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17	BRS	L17	6	8 and 10 and 13 and 16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:05
18	BRS	L18	26663	((kahn$1.in. adj2 (p.in. or philippe.in.)) or (kinsolving$1.in. adj2 (a.in. or arthur.in.)) or (christensen$1.in. adj2 (m.in. or mark.in.)) or (lee$1.in. adj2 (b.in. or brian.in.)) or (vogel$1.in. adj2 (d.in. or david.in.)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:06
19	BRS	L19	2	"7653508".urpn. or "7653508" or ("7653508").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:06

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21	BRS	L21	75	("6941239" or "20050222801" or "20050232404" or "20050232388" or "6959259" or "20050238132" or "20050240375" or "20050248718" or "6975959" or "20060020177" or "7010332" or "20060100546" or "20060136173" or "7072789" or "7092846" or "20060223547" or "7148797" or "7158912" or "7169084" or "7171331" or "20070063850" or "20070067094" or "7200517" or "20070082789" or "7212943" or "7220220" or "20070125852" or "20070142715" or "7297088" or "7328611" or "7334472" or "7353112" or "7382611" or "7387611" or "7457719" or "20090043531" or "7526402" or "20090234614" or "7647196" or "7753861").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:06

	Type	L #	Hits	Search Text	DBs	Time Stamp
22	BRS	L22	459	(1 or 3 or 5 or 8 or 10 or 13 or 16) and (18 or 19 or 20 or 21)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:07
23	BRS	L23	1510	6 or 17 or 22 Reviewed Ti, Ab, Kwic All /ERC/ 10 September 2010	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	2010/09/10 18:08
24	BRS	L24	1516	(@pd>="19470101" and @pd<="19710101") and (33/700 or 33/701 or 73/1.01 or 73/1.37 or 73/1.38 or 73/1.75 or 73/1.76 or 73/1.77 or 73/1.78 or 73/1.79 or 73/1.81 or 377/1 or 377/13 or 377/15 or 377/17 or 377/20 or 377/24 or 377/24.1 or 377/24.2 or 702/1 or 702/85 or 702/97 or 702/127 or 702/141 or 702/150 or 702/155 or 702/158 or 702/160 or 702/187 or 702/189).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB Reviewed Ti All NO HITS /ERC/ 10 September 2010	2010/09/10 18:09

Interference Search of L23 & L24
/ERC/
09 September 2010

	Document ID	Publication Date	Inventor	Current OR	Current XRef	Pages
1	US 5976083 A	19991102	Richardson; J. Jeffrey et al.	600/300	482/8; 482/901; 600/481; 600/587	34
2	US 6135951 A	20001024	Richardson; J. Jeffrey et al.	600/300	482/8; 600/592; 600/595	32
3	US 6145389 A	20001114	Ebeling; W. H. Carl et al.	73/865.4		14
4	US 6369794 B1	20020409	Sakurai; Yasuhiro et al.	345/156	379/433.04	37
5	US 20020089425 A1	20020711	Kubo, Nobuo et al.	340/573.1	340/669	28
6	US 20030018430 A1	20030123	Ladetto, Quentin et al.	701/217	701/200	56
7	US 6611789 B1	20030826	Darley; Jesse	702/160	702/141; 702/142; 702/176	87
8	US 6700499 B2	20040302	Kubo; Nobuo et al.	340/686.1	340/573.1; 340/573.7; 482/3; 482/74; 600/510; 600/552; 600/553; 73/379.01; 73/379.09	27

L23 Results
/ERC/
09 September 2010

	Document ID	Publication Date	Inventor	Current OR	Current XRef	Pages
9	US 6826477 B2	20041130	Ladetto; Quentin et al.	701/217	340/944; 701/200; 701/213; 73/178R	58
10	US 20050232388 A1	20051020	Tsuji, Tomoharu	377/24.2		10
11	US 20050238132 A1	20051027	Tsuji, Tomoharu	377/24.2		10
12	US 20060020177 A1	20060126	Seo; Jeong-Wook et al.	600/300	482/8; 600/595	90
13	US 7169084 B2	20070130	Tsuji; Tomoharu	482/8	482/1; 482/9; 702/160	9
14	US 20070061105 A1	20070315	Darley; Jesse et al.	702/182		86
15	US 20070067094 A1	20070322	Park; Kyong-Ha et al.	701/200	702/141	13
16	US 20070208531 A1	20070906	Darley; Jesse et al.	702/142	702/158; 702/178	86
17	US 7297088 B2	20071120	Tsuji; Tomoharu	482/3	377/24.2; 482/8; 482/900; 702/160	10
18	US 7334472 B2	20080226	Seo; Jeong-Wook et al.	73/379.01		89
19	US 7457719 B1	20081125	Kahn; Philippe et al.	702/141		16
20	US 20090043531 A1	20090212	Kahn; Philippe et al.	702/149		22
21	US 20090234614 A1	20090917	Kahn; Philippe et al.	702/141	351/158	18
22	US 20090319221 A1	20091224	Kahn; Philippe et al.	702/141		31

L23 Results
/ERC/
09 September 2010

	Document ID	Publication Date	Inventor	Current OR	Current XRef	Pages
23	US 7647196 B2	20100112	Kahn; Philippe et al.	702/149	702/142; 702/150; 702/154	22
24	US 7653508 B1	20100126	Kahn; Philippe et al.	702/160	33/700; 377/1; 377/13; 377/24.2; 377/25; 702/1; 702/127; 702/155; 702/158; 702/187; 702/189	19
25	US 20100057398 A1	20100304	Darley; Jesse et al.	702/160	702/142	85
26	US 20100056872 A1	20100304	Kahn; Philippe et al.	600/300		22
27	US 7753861 B1	20100713	Kahn; Philippe et al.	600/595	482/8; 482/9; 600/300; 600/301; 600/587	24

L23 Results
/ERC/
09 September 2010

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	9343	(motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise) near4 (inertial or gyro or gyroscope or accel or acceler$1meter or mem$1 or micro$1electro$1mechanical or monit$1r or monitoring or detecting or detect$1r or sensing or sens$1r or transducer or sample or sampled or sampling or sampl$1r or meter or metering or gauge or gauging or gage or gaging or gag$1r)	UPAD	2010/09/10 20:29
2	BRS	L2	13692	(motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near3 (profile or shape or trend or pattern or sequence or signature or curve or line or function or eq or equ or equation)	UPAD	2010/09/10 20:29
3	BRS	L3	1360	(L2 adj5 (motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise)) or ((motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise) adj5 L2)	UPAD	2010/09/10 20:29
4	BRS	L4	2711	(sleep or sleeping or wait or inactive or dormant) near3 (state or mode or period or interval)	UPAD	2010/09/10 20:29

	Type	L #	Hits	Search Text	DBs	Time Stamp
5	BRS	L5	722	L4 same (L2 or ("not" near6 L2) or no$1motion or no$1movement or no$2mov$3 or no$2step$3 or no$2walk$3 or no$2run$4 or no$2jog$4 or no$2activity or no$2exercise or inactive or inactivity)	UPAD	2010/09/10 20:29
6	BRS	L6	15	L1 and L3 and L5	UPAD	2010/09/10 20:29
7	BRS	L7	18294	(motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near4 (criteria or criterion or criterium or setpoint or point or level or threshold or limit or requirement or tolerance or window or range or band or qualify or qualified or qualifying or qualification or standard or bench or benchmark or baseline or base or reference)	UPAD	2010/09/10 20:29
8	BRS	L8	1107	L7 near6 (inertial or gyro or gyroscope or accel or acceleration or acceler$1meter or mem$1 or micro$1electromechanical or monit$1r or monitoring or detecting or detect$1r or sensing or sens$1r or transducer or sample or sampled or sampling or sampl$1r or meter or metering or gauge or gauging or gage or gaging or gag$1r)	UPAD	2010/09/10 20:29

	Type	L #	Hits	Search Text	DBs	Time Stamp
9	BRS	L9	5636	(count or counted or counting or counter or total or number or sum or register or buffer) near2 (motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence)	UPAD	2010/09/10 20:29
10	BRS	L10	812	9 near6 (inc or increase or increased or increasing increment or incrementing or add or added or adding or addition or plus or pluss or sum or summed or summing or summation or dec or decrease or decreased or decreasing or decrement or sub or subtract or subtracted or subtracting or subtraction)	UPAD	2010/09/10 20:30
11	BRS	L11	44	9 same (((count or motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near2 (criteria or criterion or criterium or setpoint or point or level or threshold or limit or requirement or tolerance or window or range or band or qualify or qualified or qualifying or qualification or standard or bench or benchmark or baseline or base or reference)) near5 (low or lower or lowest or bottom or less or below or beneath or underneath))	UPAD	2010/09/10 20:30
12	BRS	L12	639	(7 or cadence) near4 (default or pre$1set or predetermined)	UPAD	2010/09/10 20:30
13	BRS	L13	5	11 and 12	UPAD	2010/09/10 20:30

	Type	L #	Hits	Search Text	DBs	Time Stamp
14	BRS	L14	92	9 same (((count or motion or movement or step or walk or walking or run or running or jog or jogging or activity or exercise or cadence) near2 (criteria or criterion or criterium or setpoint or point or level or threshold or limit or requirement or tolerance or window or range or band or qualify or qualified or qualifying or qualification or standard or bench or benchmark or baseline or base or reference)) near5 (high or higher or highest or upper or top or greater or above or outside or exceed or exceeded or exceeding))	UPAD	2010/09/10 20:31
15	BRS	L15	567	(7 or cadence) near4 (dynamic or changing or chang$1able or altering or alter$1able or modifying or modif$2able or adjusting or adjust$1able or selecting or select$1able or shifting or shift$1able or updating or updat$2able)	UPAD	2010/09/10 20:31
16	BRS	L16	1	14 same 15	UPAD	2010/09/10 20:31
17	BRS	L17	0	8 and 10 and 13 and 16	UPAD	2010/09/10 20:31
18	BRS	L18	45	((kahn$1.in. adj2 (p.in. or philippe.in.)) or (kinsolving$1.in. adj2 (a.in. or arthur.in.)) or (christensen$1.in. adj2 (m.in. or mark.in.)) or (lee$1.in. adj2 (b.in. or brian.in.)) or (vogel$1.in. adj2 (d.in. or david.in.)))	UPAD	2010/09/10 20:31
19	BRS	L19	17	(1 or 3 or 5 or 8 or 10 or 13 or 16) and 18	UPAD	2010/09/10 20:32

	Type	L #	Hits	Search Text	DBs	Time Stamp
20	BRS	L20	31	6 or 17 or 19	UPAD	2010/09/10 20:32

L19 Reviewed Ti, Ab, Kwic All
NO HITS
/ERC/
09 September 2010

Interference Search of L19
/ERC/
09 September 2010

APPROVED DRAWING CHANGES
/ERC/
10 September 2010

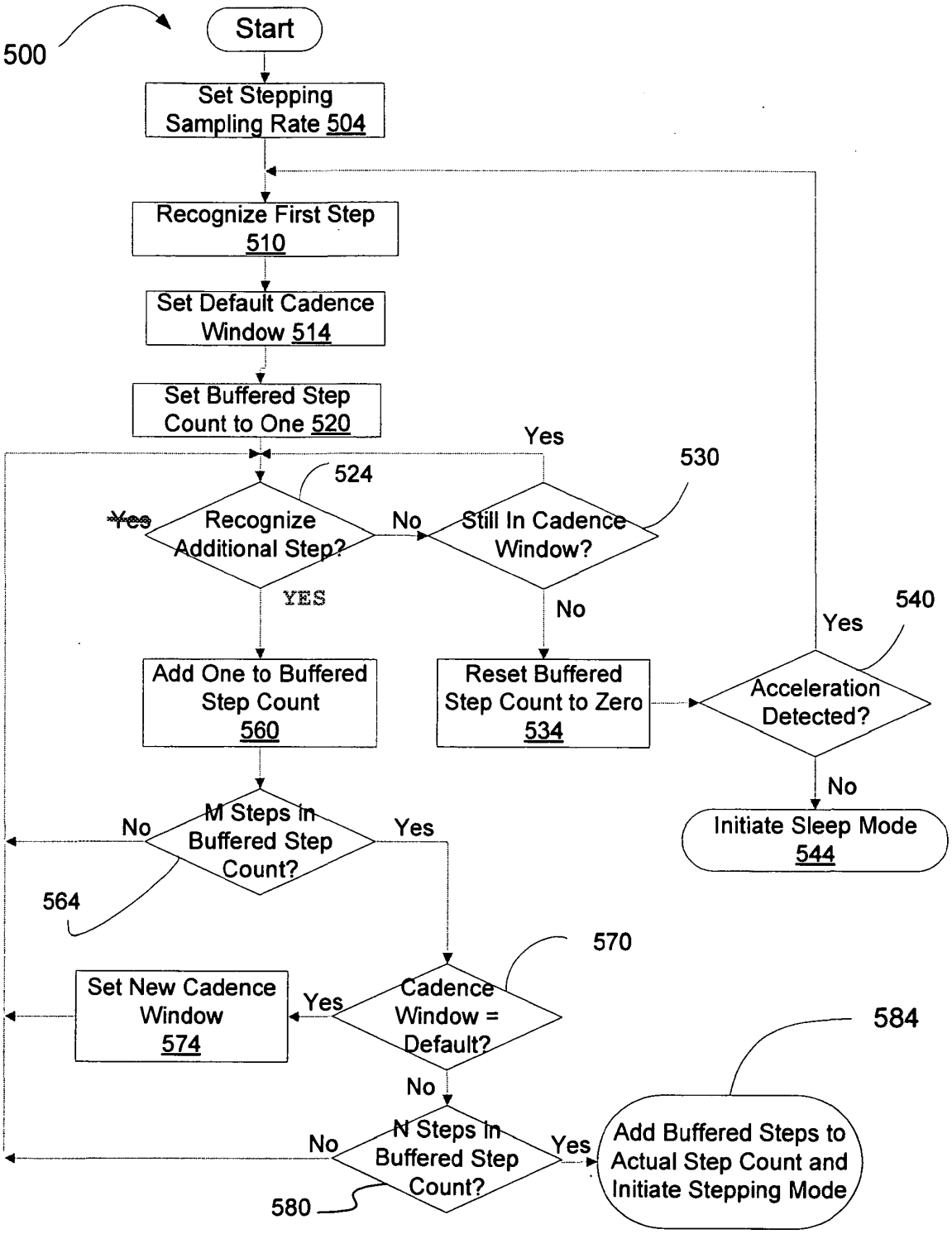

Figure 5

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	Not yet assigned
				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	1	of	4	Attorney Docket Number	8689P027C

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/E.C./		US-	4,285,041	8/18/1981	Smith	
/E.C./		US-	4,578,769	3/25/1986	Frederick	
/E.C./		US-	5,446,725	8/29/1995	Ishiwatari	
/E.C./		US-	5,446,775	8/25/1995	Wright et al	
/E.C./		US-	5,593,431	1/14/1997	Sheldon	
/E.C./		US-	5,955,667	9/21/1999	Fyfe	
/E.C./		US-	5,976,083	11/2/1999	Richardson, et al.	
/E.C./		US-	6,013,007	1/11/2000	Root et al	
/E.C./		US-	6,135,951	10/24/2000	Richardson, et al.	
/E.C./		US-	6,145,389	11/14/2000	Ebeling, et al.	
/E.C./		US-	6,369,794	4/9/2002	Sakurai et al	
/E.C./		US-	6,493,652	12/10/2002	Ohlenbusch et al	
/E.C./		US-	6,513,381	2/4/2003	Fyfe et al.	
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/E.C./		US-	6,532,419	3/11/2003	Begin, et al.	

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Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

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				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	2	**of**	4	Attorney Docket Number	8689P027C

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/E.C./		US-	6,539,336	3/25/2003	Vock, et al.	
/E.C./		US-	6,700,499	3/2/2004	Kubo et al	
/E.C./		US-	6,790,178	9/14/2004	Mault, et al.	
/E.C./		US-	6,813,582	11/2/2004	Levi et al.	
/E.C./		US-	6,823,036	11/23/2004	Chen	
/E.C./		US-	6,826,477	11/30/2004	Ladetto et al	
/E.C./		US-	6,836,744	12/28/2004	Asphahani, et al.	
/E.C./		US-	6,881,191	4/19/2005	Oakley, et al.	
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/E.C./		US-	6,898,550	5/24/2005	Blackadar, et al.	
/E.C./		US-	6,928,382	8/9/2005	Hong et al	
/E.C./		US-	6,941,239	9/6/2005	Unuma, et al.	
/E.C./		US-	6,959,259	10/25/2005	Vock, et al.	
/E.C./		US-	7,010,332	3/7/2006	Irvin et al	
/E.C./		US-	7,072,789	7/4/2006	Vock, et al.	
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/E.C./		US-	7,148,797	12/12/2006	Albert	
/E.C./		US-	7,158,912	1/20/2007	Vock, et al.	
/E.C./		US-	7,169,084	1/30/2007	Tsuji, Tomoharu	
/E.C./		US-	7,171,331	1/30/2007	Vock, et al.	
/E.C./		US-	7,200,517	4/3/2007	Darley, et al.	
/E.C./		US-	7,212,943	5/1/2007	Aoshima, et al.	
/E.C./		US-	7,220,220	5/22/2007	Stubbs, et al.	
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/E.C./		US-	7,387,611	6/17/2008	Inoue et al.	
/E.C./		US-	7,457,719	11/25/2008	Kahn et al	

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

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				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	3	**of**	4	Attorney Docket Number	8689P027C

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/E.C./		US-	2002/0089425	7/11/2002	Kubo et al	
/E.C./		US-	2002/0109600	8/15/2002	Mault, James R.; et al.	
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/E.C./		US-	2005/0240375	10/27/2005	Sugai, Yoshinori	
/E.C./		US-	2005/0248718	11/10/2005	Howell, Thomas A., et al.	
/E.C./		US-	2006/0020177	1/26/2006	Seo et al	
/E.C./		US-	2006/0136173	6/22/2006	Charles Whipple Jr.; et al.	
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/E.C./		US-	2007/0063850	3/22/2007	Devaul; Richard W.; et al.	
/E.C./		US-	2007/0067094	3/22/2007	Park et al	
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/E.C./		US-	2007/0142715	6/21/2007	Banet et al.	
/E.C./		US-	2009/0043531	2/12/2009	Kahn et al	
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Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	Not yet assigned
				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	4	of	4	Attorney Docket Number	8689P027C

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
/E.C./		DAO, Ricardo, "Inclination Sensing with Thermal Accelerometers", MEMSIC, May 2002, 3 pages.	
/E.C./		LEE, SEON-WOO, et al., "Recognition of Walking Behaviors for Pedestrian Navigation," ATR Media Integration & Communications Research Laboratories, Kyoto, Japan, 4 pages. NO Date	
/E.C./		MARGARIA, Rodolfo, "Biomechanics and Energetics of Muscular Exercise", Chapter 3, pages 105-125, Oxford: Clarendon Press 1976.	
/E.C./		MIZELL, David, "Using Gravity to Estimate Accelerometer Orientation", Seventh IEEE International Symposium on Wearable Computers, 2003, 2 pages.	
/E.C./		ORMONEIT, D., et al., "Learning and Tracking Cyclic Human Motion," Encyclopedia of Library and Information Science, volume 53, supplement 16, 2001, 7 pages.	
/E.C./		PCT International Search Report and Written Opinion for International Application No. PCT/US2008/072537, mailed 22 October 2008, 10 pages.	
/E.C./		PCT International Search Report and Written Opinion for PCT/US2009/48523, mailed 8/27/2009, 8 pages	
/E.C./		WEINBERG, Harvey, "MEMS Motion Sensors Boost Handset Reliability" June 2006, http://www.mwrf.com/Articles/Print.cfm?ArticleID=12740, February 21, 2007, 4 pages.	

Examiner Signature	/Edward Cosimano/	Date Considered	09/11/2010

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

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Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	12/694,135
				Filing Date	January 26, 2010
				First Named Inventor:	Philippe Kahn
				Art Unit	2863
				Examiner Name	Not yet assigned
Sheet	1	**of**	2	Attorney Docket Number	8689P027C

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	6,975,959	12/13/2005	Dietrich et al	
		US-	7,353,112	4/1/2008	Choi et al	
		US-	7,526,402	4/28/2009	Tenanhaus et al	
		US-	2003/0139692	7/24/2003	Barrey et al	
		US-	2006/0100546	5/11/2006	Silk, Jeffrey E	
		US-	2007/0082789	4/12/2007	Nissila et al	
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Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Substitute for Form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	12/694,135
				Filing Date	January 26, 2010
				First Named Inventor:	Philippe Kahn
				Art Unit	2863
				Examiner Name	Not yet assigned
Sheet	2	**of**	2	Attorney Docket Number	8689P027C

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		"Wearable Health Reports," Technology Review, February 28, 2006, http://www.techreview.com/printer_friendly_article_aspx?id+16431, 3/22/2007, 3 pages	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	7704899
Application Number:	12694135
International Application Number:	
Confirmation Number:	5414
Title of Invention:	Human Activity Monitoring Device
First Named Inventor/Applicant Name:	Philippe Kahn
Customer Number:	08791
Filer:	Judith A. Szepesi
Filer Authorized By:	
Attorney Docket Number:	8689P027C
Receipt Date:	27-MAY-2010
Filing Date:	26-JAN-2010
Time Stamp:	20:27:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		8689P027C_IDS_and_SB08.pdf	72282 89a5a02a0fb9462f45eef743f040784e29efdab7	yes	4

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Filed (SB/08)		3	4	
Warnings:					
Information:					
2	NPL Documents	8878P027C_NPL_TechReview.pdf	128059 2e68cfa7c1c1f3f9ad5d0b82bd7111b0ed88054f	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	200341		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Philippe Kahn, et al.	Examiner:	Not yet assigned
Appl. No.	: 12/694,135	Art Unit:	2863
Filed	: January 26, 2010	Confirmation No.	5414
For	: Human Activity Monitoring Device		
Customer No.	: 08791		

CERTIFICATE OF TRANSMISSION
I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

/Judith Szepesi/ May 27, 2010
Judith A. Szepesi ***Date***

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Enclosed is a copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 together with copies of the documents cited on that form, except for copies not required to be submitted (e.g., copies of U.S. patents and U.S. published patent applications need not be enclosed). It is respectfully requested that the cited documents be considered and that the enclosed copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s).

Pursuant to 37 C.F.R. § 1.97, the submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made and is not to be construed as an admission that the information cited in this statement is material to patentability.

Pursuant to 37 C.F.R. § 1.97, this Information Disclosure Statement is being submitted under one of the following (as indicated by an "X" to the left of the appropriate paragraph):

__X__ 37 C.F.R. §1.97(b).

_____ 37 C.F.R. §1.97(c). If so, then enclosed with this Information Disclosure Statement is one of the following:

____ A statement pursuant to 37 C.F.R. §1.97(e) or

____ The Director is Authorized to charge in the amount of $180.00 for the fee under 37 C.F.R. § 1.17(p).

_____ 37 C.F.R. §1.97(d). If so, then enclosed with this Information Disclosure Statement are the following:

(1) A statement pursuant to 37 C.F.R. §1.97(e); and

(2) A check for $180.00 for the fee under 37 C.F.R. §1.17(p) for submission of the Information Disclosure Statement.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: May 27, 2010

/Judith Szepesi/
Judith A. Szepesi
Reg. No. 39,393

1279 Oakmead Parkway
Sunnyvale, CA 94085
(408) 720-8300

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/694,135	01/26/2010	1648	1090	8689P027C	11	2

CONFIRMATION NO. 5414

8791
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

FILING RECEIPT

OC000000040056857

Date Mailed: 02/12/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Philippe Kahn, Aptos, CA;
Arthur Kinsolving, Santa Cruz, CA;
Mark Andrew Christensen, Santa Cruz, CA;
Brian Y. Lee, Aptos, CA;
David Vogel, Santa Cruz, CA;

Power of Attorney: The patent practitioners associated with Customer Number 08791

Domestic Priority data as claimed by applicant

This application is a CON of 11/644,455 12/22/2006 PAT 7,653,508

Foreign Applications

If Required, Foreign Filing License Granted: 02/05/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/694,135**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

Title

Human Activity Monitoring Device

Preliminary Class

435

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

UTILITY PATENT APPLICATION TRANSMITTAL
(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. 8689P027C
(maximum 12 characters)
First Named Inventor Philippe Kahn

Title: Human Activity Monitoring Device

ADDRESS TO: **Commissioner for Patents**
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents.

1. _____ **Fee Transmittal Form (e.g., PTO/SB/17)**
(Submit an original and a duplicate for fee processing)

2. _____ **Applicant Claims Small Entity Status. (37 CFR 1.27)**

3. X **Specification (Total Pages 39)**
(preferred arrangement set forth below)
- Descriptive Title of the Invention
- Cross Reference to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference sequence listing, a table, or a computer program listing appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

4. X **Drawings(s) (35 USC 113) (Total Sheets 9)**

5. X **Oath or Declaration (Total Pages 6)**

a. ___ Newly Executed (Original or Copy)

b. X Copy from a Prior Application (37 CFR 1.63(d))
(for Continuation/Divisional with Box 18 completed)

i. ___ DELETIONS OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).

c. ___ Unsigned.

6. X **Application Data Sheet. (37 CFR 1.76)**

7. _____ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)

8. _____ Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)

a. ___ Computer Readable Form (CRF)

b. ___ Specification Sequence Listing on:
i. _____CD-ROM or CD-R (2 copies); or
ii. _____ paper

c. ___ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9.	_____	**Assignment Papers (cover sheet & documents(s))**
10.	_____	a. Separate 37 CFR 3.73(b) Statement (where there is an assignee)
	X	b. Power of Attorney
11.	_____	English Translation Document (if applicable)
12.	X	a. Information Disclosure Statement (IDS)/PTO-1449 (or PTO/SB/08)
	X	b. Copies of IDS Citations
13.	X	**Preliminary Amendment**
14.	_____	**Return Receipt Postcard (MPEP 503) (Should be specifically itemized)**
15.	_____	Certified Copy of Priority Document(s) (if foreign priority is claimed)
16.	X	**Nonpublication Request under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.**
17A.	_____	Claim for Foreign Priority
17B.	_____	Other: _____

17C.	X	**Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.**

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title (e.g., by way of preliminary amendment), or in an Application Data Sheet Under 37 C.F.R. 1.76:

X **Continuation** ____ **Divisional** ____ **Continuation-in-part (CIP)**
Of Prior Application No.: 11/644,455 **Examiner** Cosimano, Edward R **Group Art Unit** 2863
(which is a ___ continuation/ ___ divisional/ ___ CIP of prior application no. _____,
which is a ___ continuation/ ___ divisional/ ___ CIP of prior application no. _____) (List entire chain of priority)

Applicant(s): Also include a Preliminary Amendment to amend the specification to claim priority.
For CONTINUATION AND DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. Correspondence Address

X **Customer Number or Bar Code Label** 08791
or (Insert Customer No. or Attach Bar Code Label here)
_____ **Correspondence Address Below**

NAME Judith A. Szepesi
REG. NO. 39,393
SIGNATURE /Judith Szepesi/
DATE January 25, 2010
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
ADDRESS 1279 Oakmead Parkway
CITY Sunnyvale **STATE** California **ZIP CODE** 94085
Country U.S.A. **TELEPHONE** (408) 720-8300 **FAX** (408) 720-8383

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

Name (PRINT/TYPE): Judith A. Szepesi **Registration No.:** 39,393

Signature: /Judith Szepesi/ **Date:** January 26, 2010

NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)

First Named Inventor Philippe Kahn
Title Human Activity Monitoring Device

Attorney Docket No. 8689P027C

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

January 25, 2010 Date	/Judith Szepesi/ Signature
(408) 720-8300 Telephone Number	Judith A. Szepesi Typed or Printed Name
	39,393 Registration No.

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Philippe Kahn, et al.	Examiner:	Not yet assigned
Appl. No.	: Not yet assigned	Art Unit:	Not yet assigned
Filed	: Herewith	Confirmation No.	Not yet assigned
For	: Human Activity Monitoring Device		
Customer No.	: 08791		

CERTIFICATE OF TRANSMISSION
I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

/Judith Szepesi/ January 26, 2010
Judith A. Szepesi ***Date***

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to examination of this application, Applicant respectfully requests that the Examiner enter the following amendment and consider the following remarks:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 7 of this paper.

IN THE SPECIFICATION

On page 2, after the title, please insert the following:

The present patent application is a continuation of U.S. Application No. 11/644,455, filed on December 22, 2006.

IN THE CLAIMS:

Claims 1-20 (Cancelled)

21. (New) A method comprising:

detecting motion by an inertial sensor included in a mobile device;

determining, by the mobile device, whether the motion has a motion signature indicative of a user activity that the mobile device is configured to monitor;

when the motion does not have a motion signature of a user activity that the mobile device is configured to monitor, entering a sleep mode.

22. (New) The method of claim 21, further comprising:

when the motion does have a motion signature of a user activity that the mobile device is configured to monitor, monitoring for future motions having the motion signature.

23. (New) The method of claim 21, further comprising, while the mobile device is in the sleep mode:

periodically sampling acceleration data at a predetermined sampling rate, wherein each sample includes acceleration data measured by the inertial sensor over a predetermined time period; and

when acceleration data having a motion signature indicative of a user activity that the mobile device configured to monitor is detected within the predetermined time period, exiting the sleep mode.

24. (New) The method of claim 21, wherein the inertial sensor has an inertial wakeup functionality, the method further comprising, while the mobile device is in the sleep mode:

detecting a motion sufficient to trigger the inertial wakeup;

sampling acceleration data for a predetermined time period;

determining whether the acceleration data includes a motion signature indicative of a user activity that the mobile device is configured to monitor; and

when the acceleration data includes a motion signature indicative of a user activity that the mobile device is configured to monitor, exiting the sleep mode.

25. (New) A method for a mobile device comprising:

receiving acceleration data that meets stepping criteria from an accelerometer included in the mobile device;

incrementing a step count in a step count buffer;

when at least one of a) the step count is below a step count threshold, or b) a current user cadence fails to match a step cadence of a user profile, using a default step cadence window to identify a time frame within which to monitor for a next step; and

when the step count is at or above the step count threshold, determining a dynamic step cadence window and using the dynamic step cadence window to identify the time frame within which to monitor for the next step.

26. (New) The method of claim 25, wherein the step count buffer represents probable steps, the method further comprising:

emptying the step count buffer and acknowledging the step counts from the step count buffer as actual steps when the step count buffer reaches the step count threshold; and

entering a stepping mode upon emptying the step count buffer.

27. (New) The method of claim 25, further comprising, upon determining the dynamic step cadence window:

examining previous acceleration data to determine whether any additional steps would have been counted if the dynamic step cadence window had been used when the previous acceleration data was received; and

counting those additional steps.

28. (New) The method of claim 25, wherein determining the dynamic step cadence window comprises:

computing a rolling average of stepping periods of previously counted steps; and

setting the dynamic step cadence window based on the rolling average of stepping periods.

29. (New) The method of claim 25, wherein the stepping criteria comprise:

a first criterion that is satisfied when a current acceleration measurement has a greater magnitude than a previous acceleration measurement;

a second criterion that is satisfied when the current acceleration measurement has a greater magnitude than a lower threshold; and

a third criterion that is satisfied when the current acceleration measurement has a lesser magnitude than an upper threshold.

30. (New) The method of claim 25, further comprising:

determining an orientation of the mobile device with respect to gravity;

assigning a dominant axis based on the orientation; and

comparing only acceleration data for the dominant axis to the to the stepping criteria to make a determination that the acceleration data meets the stepping criteria.

31. (New) The method of claim 25, further comprising:

when the current user cadence matches the step cadence of a user profile, using a stored step cadence window of the user profile to identify the time frame within which to monitor for the next step.

REMARKS

Applicants have amended the specification to add the claim of priority.

Claims 1-20 have been cancelled. New claims 21-31 have been added. Therefore, claims 21-31 are presented for examination.

If any additional fee is required, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: January 25, 2010

/Judith Szepesi/
Judith A. Szepesi
Reg. No. 39,393

1279 Oakmead Parkway
Sunnyvale, CA 94085
(408) 720-8300

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To: LESTER VINCENT
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

RECEIVED
OCT 28 2008
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN
SUNNYVALE

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 7538P044PCT	Date of mailing *(day/month/year)* **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2008/072537	International filing date *(day/month/year)* 07 August 2008
Applicant FULLPOWER TECHNOLOGIES, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver Telephone No. 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

Entered into FIP
By:

DATE IN TO FOREIGN DOCKETING 10/28/08
DOCKETED BY
REVIEWED BY [redacted]

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: LESTER VINCENT
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	22 OCT 2008
Applicant's or agent's file reference: 7538P044PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No.: PCT/US2008/072537	International filing date *(day/month/year)*: 07 August 2008
Applicant: FULLPOWER TECHNOLOGIES, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver Telephone No. 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
7538P044PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2008/072537	07 August 2008	08 August 2007
Applicant FULLPOWER TECHNOLOGIES, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

   b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II)

3. ☐ **Unity of invention is lacking** (see Box No. III)

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant

   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1

   ☐ as suggested by the applicant

   ☒ as selected by this Authority, because the applicant failed to suggest a figure

   ☐ as selected by this Authority, because this figure better characterizes the invention

   b. ☐ none of the figures is to be published with the abstract

Form PCT/ISA/210 (first sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/072537

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G01P 5/00 (2008.04)
USPC - 702/142
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) - G01P 5/00 (2008.04)
USPC - 702/141, 142

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 practicable, search terms used)
MicroPatent, Google Patent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,522,266 B1 (SOEHREN et al) 18 February 2003 (18.02.2003) entire document	1-3, 6, 7, 13, 14, 20-22, 25, 26
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Y		4, 5, 8-12, 15-19, 23-24, 27-31
Y	US 2005/0033200 A1 (SOEHREN et al) 10 February 2005 (10.02.2005) entire document	4-5, 15, 23, 24
Y	US 6,681,191 B2 (OAKLEY et al) 19 April 2005 (19.04.2005) entire document	8, 9, 16, 17, 27, 28
Y	US 2004/0225467 A1 (VOCK et al) 11 November 2004 (11.11.2004) entire document	10-12, 18, 19, 29-31

☐ Further documents are listed in the continuation of Box C. ☐

* 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 another 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
"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	Date of mailing of the international search report
07 October 2008	22 OCT 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: LESTER VINCENT
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	22 OCT 2008
Applicant's or agent's file reference 7538P044PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/072537	07 August 2008	08 August 2007

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G01P 5/00 (2008.04)
USPC - 702/142

Applicant
FULLPOWER TECHNOLOGIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	07 October 2008	Blaine Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/072537

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/072537

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	4, 5, 8-12, 15-19, 23, 24, 27-31	YES
	Claims	1-3, 6, 7, 13, 14, 20-22, 25, 26	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-31	NO
Industrial applicability (IA)	Claims	1-31	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-3, 6, 7, 13, 14, 20-22, 25, and 26 lack novelty under PCT Article 33(2) as being anticipated by Soehren et al. (US 6,522,266 B1), hereinafter referred to as Soehren '266.

Regarding Claim 1, Soehren '266 discloses a method of monitoring human activity (navigation system for a human, abstract), comprising:
monitoring accelerations (100, fig. 1) using an inertial sensor (414, fig. 4) disposed at one of a plurality of locations on a human body, wherein at least one of the plurality of locations is not a foot location (backpack, wrist or arm location, col. 14, lines 23-30);
counting a plurality of steps based on the accelerations (counting steps, col. 6, line 35);
determining a gait characteristic of the plurality of steps (frequency of step, col. 6, lines 32-36);
using the gait characteristic to determine a stride length (step length determined, col. 6, lines 16-28); and
determining at least one of a distance traveled and a speed of travel based on the stride length (distance traveled determined, col. 6, lines 36-39).

Regarding Claim 13, Soehren '266 discloses a mobile apparatus (navigation system for a human, abstract), comprising:
an inertial sensor (414, fig. 4) to monitor accelerations (100, fig. 1) from one of a plurality of locations on a body, wherein at least one of the plurality of locations is not a foot location (backpack, wrist or arm location, col. 14, lines 23-30);
a step counting logic coupled with the inertial sensor to count a plurality of steps based on the accelerations (counting steps, col. 6, line 35);
a gait logic coupled with the step counting logic to determine a gait characteristic of the plurality of steps (modeling step distance, col. 6, lines 16-28); and
a distance logic coupled with the gait logic to determine a stride length of the plurality of steps based on the gait characteristic (step length versus walking speed algorithm, col. 6, lines 20-28; also col. 14, lines 42-57; the distance is determined, col. 6, lines 32-36);
and to apply the stride length to the plurality of steps to determine at least one of a distance traveled and a speed of travel (motion classifier combines the step length and frequency to determine the distance traveled, col. 6, lines 36-39).

Regarding claim 20, Soehren '266 discloses a machine-accessible storage medium including instructions that, when executed by a machine, cause the machine to perform a method (computer or processor 404, fig. 4; col. 6, lines 8-53), comprising:
monitoring accelerations (100, fig. 1) using an inertial sensor (414, fig. 4) disposed at one of a plurality of locations on a human body, wherein at least one of the plurality of locations is not a foot location (backpack, wrist or arm location, col. 14, lines 23-30);
counting a plurality of steps based on the accelerations (counting steps, col. 6, line 35);
determining a gait characteristic of the plurality of steps (frequency of step, col. 6, lines 32-36);
using the gait characteristic to determine a stride length (step length determined, col. 6, lines 16-28); and
determining at least one of a distance traveled and a speed of travel based on the stride length (distance traveled determined, col. 6, lines 36-39).

Regarding Claims 2 and 21, Soehren '266 discloses the gait characteristic comprises a step cadence (step per unit time, col. 6, lines 33-36).

Regarding Claims 3 and 22, Soehren '266 discloses that determining the stride length includes locating a stride length associated with the gait characteristic in a data structure (step length versus walking speed algorithm, col. 6, lines 20-28; also col. 14, lines 42-57; fig. 6 shows data structure).

Regarding Claims 6, 7, 14, 25, and 26, Soehren '266 discloses receiving distance information, wherein the distance information is based on at least one of global positioning system (GPS) data, network triangulation data, or user input (d-GPS 510, fig. 5, col. 8, lines 45-61) and automatically calibrating the stride length based on a difference between the received distance information and the determined distance traveled (col. 8, line 62 to col. 9, line24).

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Claims 4, 5, 15, 23, and 24 lack an inventive step under PCT Article 33(3) as being obvious over Soehren '266 in view of Soehren et al. (US 2005/0033200 A1), hereinafter referred to as Soehren '200.

Regarding Claims 4, 15, and 23, Soehren '266 discloses that the data structure includes a plurality of entries, each of the plurality of entries associating a distinct stride length with one or more distinct gait characteristics (col. 6, lines 20-28; also col. 14, lines 42-57; fig. 6), but lacks the teaching of determining one or more user attributes; and modifying the data structure based on the one or more user attributes to calibrate the stride length by changing one or more of the plurality of entries.
Soehren '200 teaches a method of monitoring human activity (classifying and measuring human motion, abstract), comprising:
monitoring accelerations using an inertial sensor (IMU 24, fig. 2, para. 0033) in order to provide a distance estimate (28, para. 0041) and further teaches determining one or more user attributes (52, information on the state of the person monitored, para. 0041); and
modifying the data structure based on the one or more user attributes 52 to 50 to Kalman filter 41) to calibrate the stride length by changing one or more of the plurality of entries (Kalman filter feeds back to motion classification unit 28, where the stride length is initially calculated, para. 0012, 0041).
It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the user attributes of Soehren '200 to the data structure and analysis of Soehren '266 in order to monitor persons with health problems so that help can be sent should they become incapacitated (Soehren '200, para. 0004).

Regarding Claims 5 and 24, Soehren '266 lacks the teaching of receiving a user input of one or more user attributes; and generating the data structure using the one or more user attributes.
Soehren '200 teaches a method of monitoring human activity (classifying and measuring human motion, abstract), comprising:
monitoring accelerations using an inertial sensor (IMU 24, fig. 2, para. 0033) in order to provide a distance estimate (28, para. 0041) and further teaches receiving a user input of one or more user attributes (52, information on the state of the person monitored, para. 0041); and
generating the data structure using the one or more user attributes (52 to 50 to Kalman filter 41).
It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the user attributes of Soehren '200 to the data structure and analysis of Soehren '266 in order to monitor persons with health problems so that help can be sent should they become incapacitated (Soehren '200, para. 0004).

Claims 8, 9, 16, 17, 27, and 28 lack an inventive step under PCT Article 33(3) as being obvious over Soehren '266 in view of Oakley et al., hereinafter referred to as Oakley.

Regarding claims 8, 16, and 27, Soehren '266 teaches the use of a stride length to determine a distance travelled as previously described with respect to claim 1, but lacks the teaching of receiving a heart rate from a heart rate sensor; and determining information about the distance traveled based on the heart rate.
Oakley teaches a movement sensor system (abstract) in which heart rate is monitored by a heart rate sensor (col. 1, lines 8-10) and is used to determine information about the stride length based on the heart rate (heart-rate measurement used to determine user's stride length or number of strides, col. 3, lines 19-24).
It would have been obvious to one of ordinary skill in the art at the time of the invention to use the heart rate information as taught by Oakley to determine the distance travelled of Soehren '266 in order to aid in determining the energy expenditure of the user over distance in order to define a weight loss regimen (Oakley, col. 1, lines 48-55).

Regarding claims 9 and 17, Soehren '266 discloses that determining information comprises determining an incline (col. 3, lines 8-14), and adjusting a stride length to gait characteristic based on the incline (230, fig. 2).

Regarding claim 28, Soehren '266 discloses that determining information comprises determining an incline (col. 3, lines 8-14), and adjusting a stride length to cadence correlation based on the incline (230, fig. 2).

Claims 10-12, 18, 19, and 29-31 lack an inventive step under PCT Article 33(3) as being obvious over Soehren '266 in view of Vock et al., hereinafter referred to as Vock.

Regarding claims 10, 18, and 29, Soehren '266 lacks the teaching of using a competition logic to compare the distance traveled and the speed of travel to stored race data to generate a comparison result; and presenting a real time performance indication that includes the comparison result.
Vock teaches the use of inertial sensors in a distance (para. 0074) and speed (para. 0050) measuring system and further teaches the use of a competition logic (controller subsystem 12, fig. 1A) to compare the distance traveled and the speed of travel to stored race data to generate a comparison result (claim 1; para. 0081); and
presenting a real time performance indication that includes the comparison result (para. 0191).
It would have been obvious to one of ordinary skill in the art at the time of the invention to use the comparison data of Vock in the method of Soehren in order to provide a quantification of a user's activity in relation to others (Vock, para. 0022) so as to guide him in improving his skills.

Regarding claims 11 and 30, Soehren '266 lack the teaching of receiving stored race data from one of a server and a mobile device.
Vock teaches receiving stored race data from one of a server and a mobile device (82, fig. 1B).
It would have been obvious to one of ordinary skill in the art at the time of the invention to use the server of Vock to download the race data in order to allow the user to compare his statistics to a plurality of statistics from other users (Vock, para. 0022).

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding claims 12 and 31, modified Soehren '266 discloses comparing data as shown above, and Soehren '266 further teaches normalizing at least one of the distance traveled, the speed of travel, the stored distance traveled, and the stored speed of travel (accelerometer signals are divided into 2.56 second signal segments, further processing determines the human motion, col. 15, lines 25-32; the human motion is used to determine the distance travelled, col. 15, lines 2-4).

Regarding claim 19, Soehren '266 lacks the teaching of a competition logic to enable users to set up time shifted races.
Vock teaches a competition logic which can enable users to set up time shifted races (comparing scores with other players across the world, para. 0404).
It would have been obvious to one of ordinary skill in the art at the time of the invention use the competition logic of Vock in the apparatus of Soehren '266 in order to allow players to improve their abilities by comparison with their own previous score or with other players (Vock, para. 0404).

Claims 1-31 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
LESTER J. VINCENT
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day month year)* 07 AUG 2009
Applicant's or agent's file reference 8689P060PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 09/48523	International filing date *(day month year)* 24 June 2009 (24.06.2009)
Applicant DP TECHNOLOGIES, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 8689P060PCT	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 09/48523	International filing date *(day/month/year)* 24 June 2009 (24.06.2009)	(Earliest) Priority Date *(day/month/year)* 24 June 2008 (24.06.2008)
Applicant DP TECHNOLOGIES, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☐ as suggested by the applicant.

☒ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/48523

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G01C 22/00 (2009.01)
USPC - 702/160
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)
USPC - 702/160

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 702/141; 702/155 -- text search, see search terms below

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB,USPT,EPAB,JPAB); Google; Search Terms Used:
motion, acceleration, inertial, sensor, notification, application, program, confidence, probability, rating, setting, walking, running, cadence, revolution, axis, monitor, state, biking, plurality, potential, count

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2005/0222801 A1 (Wulff et al.), 06 October 2005 (06.10.2005), especially Fig 3 and para [0022]-[0027], [0040], [0043]-[0045]	1, 2, 6-8, 12-14, 19 ---------- 3-5, 9-11, 15-18
Y	US 2006/0223547 A1 (Chin et al.), 05 October 2006 (05.10.2006), especially para [0065]	3, 4, 9, 10, 15, 16
Y	US 7,200,517 B2 (Darley et al.), 03 April 2007 (03.04.2007), especially Fig 7 and col 72, ln 45-50	5, 11, 17, 18

☐ Further documents are listed in the continuation of Box C. ☐

* 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 another 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
"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	Date of mailing of the international search report
29 July 2009 (29.07.2009)	07 AUG 2009
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
LESTER J. VINCENT
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	07 AUG 2009
Applicant's or agent's file reference 8689P060PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day month year)*	Priority date *(day month year)*
PCT/US 09/48523	24 June 2009 (24.06.2009)	24 June 2008 (24.06.2008)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G01C 22/00 (2009.01)
USPC - 702/160

Applicant DP TECHNOLOGIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	29 July 2009 (29.07.2009)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/48523

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Form PCT/ISA/237 (Box No. I) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/48523

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	3-5, 9-11, 15-18	YES
	Claims	1, 2, 6-8, 12-14, 19	NO
Inventive step (IS)	Claims	none	YES
	Claims	1-19	NO
Industrial applicability (IA)	Claims	1-19	YES
	Claims	none	NO

2. Citations and explanations:

Claims 1, 2, 6-8, 12-14, and 19 lack novelty under PCT Article 33(2) as being anticipated by US 2005/0222801 A1 to Wulff et al. (hereinafter 'Wulff').

Regarding claim 1, Wulff discloses a a method of monitoring a motion state, comprising: monitoring accelerations by an electronic device using an inertial sensor (see Fig 3 and para [0023]); identifying, by the electronic device, a current motion state based on the accelerations (see para [0024]); determining an application that subscribes to a motion state identification service (see para [0027] -- 'determines the corresponding procedure of the plurality of predetermined procedures'); and notifying the application of the current motion state (see para [0043]-[0045]).

Regarding claim 2, Wulff discloses the method of claim 1. Wulff further discloses determining whether the current motion state is different from a previous motion state (see para [0024]); and modifying one or more settings of the application if the current motion state is different from the previous motion state (see para [0040]).

Regarding claim 6, Wulff discloses the method of claim 1. Wulff further discloses identifying notification criteria associated with the application (see para [0026] -- 'threshold value'); and notifying the application of the current motion state when the identified notification criteria are satisfied (see para [0026]).

Regarding claim 7, Wulff discloses a computer readable storage medium including instructions that, when executed by a processor, cause the processor to perform a method comprising: monitoring accelerations by an electronic device using an inertial sensor (see Fig 3 and para [0023]); identifying, by the electronic device, a current motion state based on the accelerations (see para [0024]); determining an application that subscribes to a motion state identification service (see para [0027] -- 'determines the corresponding procedure of the plurality of predetermined procedures'); and notifying the application of the current motion state (see para [0043]-[0045]).

Regarding claim 8, Wulff discloses the computer readable storage medium of claim 7. Wulff further discloses determining whether the current motion state is different from a previous motion state (see para [0024]); and modifying one or more settings of the application if the current motion state is different from the previous motion state (see para [0040]).

Regarding claim 12, Wulff discloses the computer readable storage medium of claim 7. Wulff further discloses identifying notification criteria associated with the application (see para [0026] -- 'threshold value'); and notifying the application of the current motion state when the identified notification criteria are satisfied (see para [0026]).

Regarding claim 13, Wulff discloses an electronic device, comprising: an application that runs on the electronic device (see para [0043]-[0045]); an inertial sensor to monitor accelerations experienced by the electronic device (see Fig 3 and para [0023]); and a motion state identification system to identify a current motion state based on the accelerations, to determine that the application subscribes to a motion state identification service, and to notify the application of the current motion state (see para [0024], [0027], [0043]-[0045]).

Regarding claim 14, Wulff discloses the electronic device of claim 13. Wulff further discloses the motion state identification system to determine whether the current motion state is different from a previous motion state (see para [0024]), and to cause the electronic device to modify one or more settings of the application if the current motion state is different from the previous motion state (see para [0040]).

Regarding claim 19, Wulff discloses the electronic device of claim 13. Wulff further discloses the motion state identification system to identify notification criteria associated with the application (see para [0026] -- 'threshold value'), and to notify the application of the current motion state when the identified notification criteria are satisfied (see para [0026]).

-- Continued --

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:
Box No. V-2. Citations and explanations:

Claims 3, 4, 9, 10, 15, and 16 lack an inventive step under PCT Article 33(3) as being obvious over Wulff in view of US 2006/0223547 A1 to Chin et al. (hereinafter 'Chin').

Regarding claim 3, Wulff discloses the method of claim 1. Wulff further discloses wherein the current motion state is one of a plurality of potential motion states (see para [0022] -- 'prerecorded motions'). Wulff does not disclose determining a confidence rating for the current motion state that indicates a probability that the current motion state corresponds to an actual motion state of a present user of the electronic device. However, Chin discloses determining a confidence rating for the current motion state that indicates a probability that the current motion state corresponds to an actual motion state of a present user of the electronic device (see para [0065] -- 'statistical calculator to determine the likelihood of environmental condition'). It would have been obvious to one skilled in the art to combine the method of Wulff with the confidence rating of Chin, because Wulff and Chin are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include confidence rating, because such methods facilitate detection of 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 4, Wulff discloses the method of claim 1. Wulff further discloses identifying a plurality of potential current motion states (see para [0022] -- 'prerecorded motions'). Wulff does not disclose identifying confidence ratings for each of the identified potential current motion states. However, Chin discloses identifying confidence ratings for each of the identified potential current motion states (see para [0065] -- 'statistical calculator to determine the likelihood of environmental condition'). It would have been obvious to one skilled in the art to combine the method of Wulff with the confidence rating of Chin, because Wulff and Chin are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include confidence rating, because such methods facilitate detection of device's 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 9, Wulff discloses the computer readable storage medium of claim 7. Wulff further discloses wherein the current motion state is one of a plurality of potential motion states (see para [0022] -- 'prerecorded motions'). Wulff does not disclose determining a confidence rating for the current motion state that indicates a probability that the current motion state corresponds to an actual motion state of a present user of the electronic device. However, Chin discloses determining a confidence rating for the current motion state that indicates a probability that the current motion state corresponds to an actual motion state of a present user of the electronic device (see para [0065] -- 'statistical calculator to determine the likelihood of environmental condition'). It would have been obvious to one skilled in the art to combine the method of Wulff with the confidence rating of Chin, because Wulff and Chin are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include confidence rating, because such methods facilitate detection of 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 10, Wulff discloses the computer readable storage medium of claim 7. Wulff further discloses identifying a plurality of potential current motion states (see para [0022] -- 'prerecorded motions'). Wulff does not disclose identifying confidence ratings for each of the identified potential current motion states. However, Chin discloses identifying confidence ratings for each of the identified potential current motion states (see para [0065] -- 'statistical calculator to determine the likelihood of environmental condition'). It would have been obvious to one skilled in the art to combine the method of Wulff with the confidence rating of Chin, because Wulff and Chin are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include confidence rating, because such methods facilitate detection of 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 15, Wulff discloses the electronic device of claim 13. Wulff further discloses wherein the current motion state is one of a plurality of potential motion states (see para [0022] -- 'prerecorded motions'). Wulff does not disclose the motion state identification system to determine a confidence rating for the current motion state that indicates a probability that the current motion state corresponds to an actual motion state of a present user of the electronic device. However, Chin discloses the motion state identification system to determine a confidence rating for the current motion state that indicates a probability that the current motion state corresponds to an actual motion state of a present user of the electronic device (see para [0065] -- 'statistical calculator to determine the likelihood of environmental condition'). It would have been obvious to one skilled in the art to combine the method of Wulff with the confidence rating of Chin, because Wulff and Chin are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include confidence rating, because such methods facilitate detection of 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 16, Wulff discloses the electronic device of claim 13. Wulff further discloses the motion state identification system to identify a plurality of potential current motion states (see para [0022] -- 'prerecorded motions'). Wulff does not disclose identify confidence ratings for each of the identified potential current motion states. However, Chin discloses identify confidence ratings for each of the identified potential current motion states (see para [0065] -- 'statistical calculator to determine the likelihood of environmental condition'). It would have been obvious to one skilled in the art to combine the method of Wulff with the confidence rating of Chin, because Wulff and Chin are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include confidence rating, because such methods facilitate detection of 'directional orientation and a motion' (see Wulff para [0005]).

-- Continued --

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/48523

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box No. V-2. Citations and explanations:

Claims 5, 11, 17, and 18 lack an inventive step under PCT Article 33(3) as being obvious over Wulff in view of US 7,200,517 B2 to Darley et al. (hereinafter 'Darley').

Regarding claim 5, Wulff discloses the method of claim 1. Wulff further discloses identifying specific additional motion information the application is configured to receive (see para [0042]-[0045] -- different applications using different motion); and sending the specific additional motion information to the application (see para [0042]-[0045] -- 'additional trigger'). Wulff does not disclose determining additional motion information from the acceleration measurements, the additional motion information including at least one of a user's current cadence, the user's current rolling averages of accelerations, a current dominant axis, and counted periodic human motion counts. However, Darley discloses determining additional motion information from the acceleration measurements, the additional motion information including at least one of a user's current cadence, the user's current rolling averages of accelerations, a current dominant axis, and counted periodic human motion counts (see Fig 7 and col 72, ln 45-50). It would have been obvious to one skilled in the art to combine the method of Wulff with the additional motion information of Darley, because Wulff and Darley are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include additional motion information, because such methods facilitate detection of device's 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 11, Wulff discloses the computer readable storage medium of claim 7. Wulff further discloses identifying specific additional motion information the application is configured to receive (see para [0042]-[0045] -- different applications using different motion); and sending the specific additional motion information to the application (see para [0042]-[0045] -- 'additional trigger'). Wulff does not disclose determining additional motion information from the acceleration measurements, the additional motion information including at least one of a user's current cadence, the user's current rolling averages of accelerations, a current dominant axis, and counted periodic human motion counts. However, Darley discloses determining additional motion information from the acceleration measurements, the additional motion information including at least one of a user's current cadence, the user's current rolling averages of accelerations, a current dominant axis, and counted periodic human motion counts (see Fig 7 and col 72, ln 45-50). It would have been obvious to one skilled in the art to combine the method of Wulff with the additional motion information of Darley, because Wulff and Darley are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include additional motion information, because such methods facilitate detection of device's 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 17, Wulff discloses the electronic device of claim 13. Wulff does not disclose the motion state identification system to determine additional motion information from the acceleration measurements, the additional motion information including at least one of a user's current cadence, the user's current rolling averages of accelerations, a current dominant axis, and counted periodic human motion counts. However, Darley discloses the motion state identification system to determine additional motion information from the acceleration measurements, the additional motion information including at least one of a user's current cadence, the user's current rolling averages of accelerations, a current dominant axis, and counted periodic human motion counts (see Fig 7 and col 72, ln 45-50). It would have been obvious to one skilled in the art to combine the method of Wulff with the additional motion information of Darley, because Wulff and Darley are directed to system and method for devices with motion sensors (see abstracts). Furthermore, users benefit from methods that include additional motion information, because such methods facilitate detection of device's 'directional orientation and a motion' (see Wulff para [0005]).

Regarding claim 18, Wulff and Darley discloses the electronic device of claim 17. Wulff further discloses the motion state identification system to identify specific additional motion information the application is configured to receive (see para [0042]-[0045] -- different applications using different motion), and to send the specific additional motion information to the application (see para [0042]-[0045] -- 'additional trigger').

Claims 1-19 have industrial applicability as defined by PCT Article 33(4), because the subject matter can be made or used in industry.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Philippe Kahn, et al.	Examiner:	Not yet assigned
Appl. No.	: Not yet assigned	Art Unit:	Not yet assigned
Filed	: Herewith	Confirmation No.	Not yet assigned
For	: Human Activity Monitoring Device		
Customer No.	: 08791		

CERTIFICATE OF TRANSMISSION
I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

/Judith Szepesi/ January 26, 2010
Judith A. Szepesi ***Date***

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Enclosed is a copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 together with copies of the documents cited on that form, except for copies not required to be submitted (e.g., copies of U.S. patents and U.S. published patent applications need not be enclosed). It is respectfully requested that the cited documents be considered and that the enclosed copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s).

Pursuant to 37 C.F.R. § 1.97, the submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made and is not to be construed as an admission that the information cited in this statement is material to patentability.

Pursuant to 37 C.F.R. § 1.97, this Information Disclosure Statement is being submitted under one of the following (as indicated by an "X" to the left of the appropriate paragraph):

__X__ 37 C.F.R. §1.97(b).

_____ 37 C.F.R. §1.97(c). If so, then enclosed with this Information Disclosure Statement is one of the following:

____ A statement pursuant to 37 C.F.R. §1.97(e) or

____ The Director is Authorized to charge in the amount of $180.00 for the fee under 37 C.F.R. § 1.17(p).

_____ 37 C.F.R. §1.97(d). If so, then enclosed with this Information Disclosure Statement are the following:

(1) A statement pursuant to 37 C.F.R. §1.97(e); and

(2) A check for $180.00 for the fee under 37 C.F.R. §1.17(p) for submission of the Information Disclosure Statement.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: January 26, 2010

/Judith Szepesi/
Judith A. Szepesi
Reg. No. 39,393

1279 Oakmead Parkway
Sunnyvale, CA 94085
(408) 720-8300

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	Not yet assigned
				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	1	**of**	4	Attorney Docket Number	8689P027C

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	4,285,041	8/18/1981	Smith	
		US-	4,578,769	3/25/1986	Frederick	
		US-	5,446,725	8/29/1995	Ishiwatari	
		US-	5,446,775	8/25/1995	Wright et al	
		US-	5,593,431	1/14/1997	Sheldon	
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		US-	6,532,419	3/11/2003	Begin, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

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Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	Not yet assigned
				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	2	**of**	4	Attorney Docket Number	8689P027C

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	6,539,336	3/25/2003	Vock, et al.	
		US-	6,700,499	3/2/2004	Kubo et al	
		US-	6,790,178	9/14/2004	Mault, et al.	
		US-	6,813,582	11/2/2004	Levi et al.	
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		US-	6,836,744	12/28/2004	Asphahani, et al.	
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		US-	7,220,220	5/22/2007	Stubbs, et al.	
		US-	7,297,088	11/20/2007	Tsuji, Tomoharu	
		US-	7,334,472	2/26/2008	Seo et al	
		US-	7,382,611	2/12/2008	Klees, et al.	
		US-	7,387,611	6/17/2008	Inoue et al.	
		US-	7,457,719	11/25/2008	Kahn et al	

Examiner Signature		Date Considered	

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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	Not yet assigned
				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	3	**of**	4	Attorney Docket Number	8689P027C

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2002/0089425	7/11/2002	Kubo et al	
		US-	2002/0109600	8/15/2002	Mault, James R.; et al.	
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		US-	2005/0240375	10/27/2005	Sugai, Yoshinori	
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		US-				
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		US-				
		US-				
		US-				
		US-				

Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	Not yet assigned
(use as many sheets as necessary)				Filing Date	Herewith
				First Named Inventor:	Philippe Kahn
				Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	4	**of**	4	Attorney Docket Number	8689P027C

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		DAO, Ricardo, "Inclination Sensing with Thermal Accelerometers", MEMSIC, May 2002, 3 pages.	
		LEE, SEON-WOO, et al., "Recognition of Walking Behaviors for Pedestrian Navigation," ATR Media Integration & Communications Research Laboratories, Kyoto, Japan, 4 pages.	
		MARGARIA, Rodolfo, "Biomechanics and Energetics of Muscular Exercise", Chapter 3, pages 105-125, Oxford: Clarendon Press 1976.	
		MIZELL, David, "Using Gravity to Estimate Accelerometer Orientation", Seventh IEEE International Symposium on Wearable Computers, 2003, 2 pages.	
		ORMONEIT, D., et al., "Learning and Tracking Cyclic Human Motion," Encyclopedia of Library and Information Science, volume 53, supplement 16, 2001, 7 pages.	
		PCT International Search Report and Written Opinion for International Application No. PCT/US2008/072537, mailed 22 October 2008, 10 pages.	
		PCT International Search Report and Written Opinion for PCT/US2009/48523, mailed 8/27/2009, 8 pages	
		WEINBERG, Harvey, "MEMS Motion Sensors Boost Handset Reliability" June 2006, http://www.mwrf.com/Articles/Print.cfm?ArticleID=12740, February 21, 2007, 4 pages.	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	Human Activity Monitoring Device
First Named Inventor/Applicant Name:	Philippe Kahn
Filer:	Judith A. Szepesi/Joan Abriam
Attorney Docket Number:	8689P027C
Filed as Large Entity	

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1090**

Electronic Acknowledgement Receipt	
EFS ID:	6878216
Application Number:	12694135
International Application Number:	
Confirmation Number:	5414
Title of Invention:	Human Activity Monitoring Device
First Named Inventor/Applicant Name:	Philippe Kahn
Customer Number:	08791
Filer:	Judith A. Szepesi
Filer Authorized By:	
Attorney Docket Number:	8689P027C
Receipt Date:	26-JAN-2010
Filing Date:	
Time Stamp:	18:39:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1090
RAM confirmation Number	4673
Deposit Account	022666
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Oath or Declaration filed	8689P027C_Declaration_and_POA.PDF	284222 e46d4cda0b474cf3d25a994c422fa3a354d75e0a	no	6
Warnings:					
Information:					
2		8689P027C_App_AsFiled.pdf	1396310 3ac7a63d2dce6f5345708d21c6d3e2243f0d6c29	yes	39
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Application Data Sheet		1	1	
	Specification		2	33	
	Claims		34	38	
	Abstract		39	39	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	8689P027C_Figures_AsFiled.pdf	169955 c68730dc9de189b451ed805c2c16826070e501ee	no	9
Warnings:					
Information:					
4		8689P027C_Transmittal.pdf	30240 3fb90a197be565373d2d6510902b73fb1758ea0e	yes	3
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal of New Application		1	2	
	Nonpublication request from applicant.		3	3	
Warnings:					
Information:					
5		8689P027C_Prelim_Amd.pdf	30426 80a6a0002a3c5063f1c52a0188e5bba5c3c7a9c7	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	

	Preliminary Amendment		1	1	
	Specification		2	2	
	Claims		3	6	
	Applicant Arguments/Remarks Made in an Amendment		7	7	
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Information:					
6	NPL Documents	8689P027C_NPL1_Dao.pdf	210159 2f447b17810d9f5d3c3d2362cc10c7e5cdb8873d	no	3
Warnings:					
Information:					
7	NPL Documents	8689P027C_NPL2_Lee.pdf	342264 b6a77902f948a32f8215ca30ff81be5813d72c76	no	4
Warnings:					
Information:					
8	NPL Documents	8689P027C_NPL3_Margaria.pdf	1545672 275c5f22fac812c52aba863f004ca49371185c73	no	22
Warnings:					
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9	NPL Documents	8689P027C_NPL4_Mizell.pdf	161586 878e4406e3ea5218e6a1a57c065c80a8384cb93f	no	2
Warnings:					
Information:					
10	NPL Documents	8689P027C_NPL5_Ormoneit.pdf	362088 f658ffc882f7d1b4f6193ca5e1022db2b358ad2b	no	7
Warnings:					
Information:					
11	NPL Documents	8689P027C_NPL6_ISRWO72537.pdf	507567 17c1aadf7dc3ebbca9e61288a5ebdbd2ed33a6f5	no	10
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Information:					
12	NPL Documents	8689P027C_NPL7_ISRWO48523.pdf	801218 5d53a2fd7431b7e01afb59ad590047248223648e	no	8
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13	NPL Documents	8689P027C_NPL8_Weinberg.pdf	342413 0dc0783de9431e2adf548cca9cd1c899b42b3e14	no	4
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Information:					
14		8689P027C_IDS_and_SB08.pdf	217426 6be3c12c8d4e18ed5cb0fa27fcb0301dc7a90e88	yes	6
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Filed (SB/08)		3	6	
Warnings:					
Information:					
15	Fee Worksheet (PTO-875)	fee-info.pdf	32910 fafb75a4c9e1b269b49eaf455d4e7a4be0586594	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	6434456		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Attorney Docket No.: 07538.P027 Patent

First Named Inventor: Philippe Kahn et al.

Check One:

___ Declaration Submitted with Initial Filing OR

_X_ Declaration Submitted After Initial Filing (Surcharge under 37 C.F.R. § 1.16(e) Required).

Complete If Known:

Application No.: _____

Filing Date: _____

Art Unit: _____

Examiner Name: _____

DECLARATION AND POWER OF ATTORNEY FOR UTILITY OR DESIGN PATENT APPLICATION

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

HUMAN ACTIVITY MONITORING DEVICE

(Title of the Invention)

the specification of which

___ is attached hereto **OR**

_X_ was filed on (12/26/2006)

as United States Application Number 11/644,455

or PCT International Application Number _____

and was amended on (MM/DD/YYYY) _____

(If applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment specifically referred to above.

I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application. I do not know and do not believe that the claimed invention was in public use or on sale in the United States of America more than one year prior to this application, nor do I know or believe that the invention has been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the

continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed?		Certified Copy Attached?	
(Number)	(Country)	(Foreign Filing Date - MM/DD/YYYY)	Yes	No	Yes	No
(Number)	(Country)	(Foreign Filing Date - MM/DD/YYYY)	Yes	No	Yes	No
(Number)	(Country)	(Foreign Filing Date - MM/DD/YYYY)	Yes	No	Yes	No

Appointment of Patent Practitioners:

I hereby appoint the patent practitioners associated with the **Customer Number 08791** as my respective patent attorneys and patent agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected herewith.

If this patent application is assigned, then the undersigned hereby authorizes the patent attorneys and patent agents named herein to accept and follow instructions from the assignee(s) as to any action to be taken in the United States Patent and Trademark Office regarding this application without direct communication between the patent attorneys and patent agents and the undersigned. In the event of a change in the persons from whom instructions may be taken, at least one patent attorney or patent agent named herein will be so notified by the undersigned.

Direct all correspondence to (check one):

_X_ Customer Number 08791 OR

___ Correspondence Address Below:

Benjamin A. Kimes
(Name of Attorney or Agent)
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025 U.S.A.
Telephone: (408) 720-8300
Fax: (408) 720-8383

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR: ☐ A petition has been filed for this unsigned inventor

Full Name: Philippe Kahn
(Given Name (First and Middle [if any]), Family Name (or Surname), and Suffix [if any])

Inventor's Signature _____ Date 3-29-07

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Aptos, CA 95003

NAME OF SECOND INVENTOR: ☐ A petition has been filed for this unsigned inventor

Full Name: Arthur Kinsolving
(Given Name (First and Middle [if any]), Family Name (or Surname), and Suffix [if any])

Inventor's Signature _____ Date _____

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Mailing Address 122 Fairview Place
Santa Cruz, CA 95062

NAME OF THIRD INVENTOR: ☐ A petition has been filed for this unsigned inventor

Full Name: Mark Andrew Christensen
(Given Name (First and Middle [if any]), Family Name (or Surname), and Suffix [if any])

Inventor's Signature _____ Date _____

Residence Santa Cruz, CA, USA *(City, State, Country)* Citizenship New Zealand *(Country)*

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Patent

UNITED STATES UTILITY PATENT APPLICATION

FOR

HUMAN ACTIVITY MONITORING DEVICE

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HUMAN ACTIVITY MONITORING DEVICE

FIELD OF THE INVENTION

[0001] This invention relates to a method of monitoring human activity, and more particularly to counting periodic human motions such as steps.

BACKGROUND

[0002] The development of Micro-Electro-Mechanical Systems (MEMS) technology has enabled manufacturers to produce inertial sensors (e.g., accelerometers) of sufficient size, cost, and power consumption to fit into portable electronic devices. Such inertial sensors can be found in a limited number of commercial electronic devices such as cellular phones, portable music players, pedometers, game controllers, and portable computers.

[0003] Step counting devices are used to monitor an individual's daily activity by keeping track of the number of steps that he or she takes. Generally, step counting devices that utilize an inertial sensor to measure motion to detect steps require the user to first position the device in a limited set of orientations. In some devices, the required orientations are dictated to the user by the device. In other devices, the beginning orientation is not critical, so long as this orientation can be maintained.

[0004] Step counting devices are often confused by motion noise experienced by the device throughout a user's daily routine. This noise causes false steps to be measured and actual steps to be missed in conventional step counting devices. Conventional step counting devices also fail to accurately measure steps for individuals

who walk at a slow pace. Such step counting devices can fail to operate for seniors and others walking at a slow pace.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The present invention is illustrated by way of example, and not by way of limitation, and can be more fully understood with reference to the following detailed description when considered in connection with the following figures:

[0006] **Figure 1** is a block diagram illustrating one embodiment of an electronic device;

[0007] **Figure 2** illustrates an exemplary cadence of motion graph that measures time versus acceleration, in accordance with one embodiment of the present invention;

[0008] **Figure 3** shows a state diagram for the behavior of a system of monitoring human activity using an inertial sensor, in accordance with one embodiment of the present invention;

[0009] **Figure 4** illustrates a flow diagram for a method of operating an electronic device in sleep mode, in accordance with one embodiment of the present invention;

[0010] **Figure 5** illustrates a flow diagram for a method of operating an electronic device in entry mode, in accordance with one embodiment of the present invention;

[0011] **Figure 6** illustrates a flow diagram for a method of operating an electronic device in stepping mode, in accordance with one embodiment of the present invention;

[0012] **Figure 7** illustrates a flow diagram for a method of operating an electronic device in exit mode, in accordance with one embodiment of the present invention;

[0013] **Figure 8** illustrates a flow diagram for a method of recognizing a step in accordance with one embodiment of the present invention, in accordance with one embodiment of the present invention; and

[0014] **Figure 9** illustrates a flow diagram for a method of orienting an inertial sensor, in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

[0015] Embodiments of the present invention are designed to monitor human activity using an inertial sensor. In one embodiment, a dominant axis is assigned after determining an orientation of an inertial sensor. The orientation of the inertial sensor is continuously determined, and the dominant axis is updated as the orientation of the inertial sensor changes. In one embodiment, periodic human motions are counted by monitoring accelerations relative to the dominant axis.

[0016] **Figure 1** is a block diagram illustrating an electronic device 100, in accordance with one embodiment of the present invention. The electronic device 100 in one embodiment comprises an acceleration measuring logic 105, a filter 120, a dominant axis logic 127, a step counting logic 130, a timer 170, and a final step count 175. In one embodiment, the electronic device 100 is a portable electronic device that includes one or more inertial sensors. The inertial sensors may measure accelerations along a single axis or multiple axes. The inertial sensors may measure linear as well as rotational (angular) accelerations. The electronic device 100 may be used to count steps or other periodic human motions. Steps may be accurately counted regardless of the placement and/or orientation of the device on a user. Steps may be accurately counted whether the electronic device 100 maintains a fixed orientation or changes orientation during operation. The electronic device 100 may be carried in a backpack, pocket, purse, hand, or elsewhere, and accurate steps may still be counted.

[0017] The acceleration measuring logic 105 measures acceleration data at a sampling rate. The sampling rate may be fixed or variable. In one embodiment, the acceleration measuring logic 105 receives a timing signal from the timer 170 in order to

take measurements at the sampling rate. The acceleration measuring logic 105 may be an inertial sensor.

[0018] In one embodiment, measurement data is processed by the filter 120 to remove noise. The filter 120 may be implemented in hardware, software, or both hardware and software. The filter 120 may include a high pass filter, a low pass filter, a bandpass filter, a bandstop filter and/or additional filters. The filter 120 may include a digital filter and/or an analog filter. In one embodiment, a hardware digital filter includes at least one of a finite impulse response (FIR) filter and an infinite impulse response (IIR) filter. In one embodiment, an N-tap hardware digital FIR filter is used. The use of a hardware FIR filter may reduce power consumption by reducing and/or eliminating software digital filtering.

[0019] In one embodiment, the filter 120 includes multiple filters, and a determination of which filters to apply to the measurement data is made based upon an operating mode of the electronic device 100. In one embodiment, the selection of which filters to use is determined by the type of user activity detected. For example, a low pass filter may be used to remove high frequency noise that would interfere with step counting when a user is walking. In contrast, a high pass filter may be used when quick motions are to be monitored.

[0020] Filtered measurement data may be passed on to the dominant axis logic 127 and the step counting logic 130. In one embodiment, the dominant axis logic 127 includes a cadence logic 132, a rolling average logic 135, and a dominant axis setting logic 140. In an alternative embodiment, more or fewer logics may be used to determine a dominant axis. One embodiment of implementing dominant axis assignment may be found in co-pending application U.S. Serial No. XXX, which is

incorporated herein by reference. Alternative means of identifying a dominant axis may be used in other embodiments.

[0021] In one embodiment, the dominant axis logic 127 is used to determine an orientation of the electronic device 100 and/or an inertial sensor within the electronic device 100. In alternative embodiments, other logics may be used to determine an orientation of the electronic device 100.

[0022] Referring to **Figure 1**, the cadence logic 132 may determine one or more sample periods to be used by the rolling average logic 135, and may determine a cadence window 150 to be used by the step counting logic 130. In one embodiment, the cadence logic 135 detects a period and/or cadence of a motion cycle. The period and/or cadence of the motion cycle may be based upon user activity (e.g. rollerblading, biking, running, walking, etc).

[0023] Many types of motions that are useful to keep track of have a periodic set of movements. Specific periodic human motions may be characteristic of different types of user activity. For example, to walk, an individual must lift a first leg, move it forward, plant it, then repeat the same series of motions with a second leg. In contrast, a person rollerblading performs a repeated sequence of pushing, coasting and liftoff for each leg. For a particular individual, the series of walking motions will usually occur in about the same amount of time, and the series of rollerblading motions will usually occur in the same amount of time. The repeated set of motions can be considered a unit, and defines the motion cycle. The amount of time that it takes to complete one motion cycle defines the motion cycle's period, and the number of motion cycles that occur in a given unit of time define the motion cycle's cadence. For simplicity, the term "step" is used in this application to describe the user activity being evaluated. However,

in the context of this application, the term "step" should be taken to mean any user activity having a periodic set of repeated movements.

[0024] **Figure 2** illustrates an exemplary motion cycle graph 201 that measures time versus acceleration, in accordance with one embodiment of the present invention. The exemplary motion-cycle graph 201 shows acceleration data taken with a single tri-axis inertial senor. The acceleration at a given period of time is represented for a first axis 203, a second axis 205, and a third axis 207. In one embodiment, the cadence logic 135 of **Figure 1** analyzes the acceleration along the first axis 203, second axis 205 and third axis 207 to detect a motion cycle. Once a motion cycle is detected, a period of the motion cycle is determined, and a cadence of the motion cycle is determined. **Figure 2** shows an exemplary period of a motion cycle 210 for the third axis 207, the period being approximately 0.6 seconds. The same period can also be seen to a lesser degree in the second axis 205 and the first axis 203. The corresponding cadence to the motion cycle is approximately one hundred motion cycles per minute.

[0025] In one embodiment, once a stepping period (or other motion cycle period) is determined, that period may be used to set the cadence window (the allowable time window for steps to occur). In one embodiment, the period is updated after each step. The current stepping period may be a rolling average of the stepping periods over previous steps, as discussed in more detail with reference to the rolling average logic 135 of **Figure 1**.

[0026] A cadence window may be used to facilitate accurate measurement of a step, or other periodic human motion. A cadence window is a window of time since a last step was counted that is looked at to detect a new step. A cadence window may be

set based on the period and/or cadence of the actual motion cycle (e.g., a stepping period), on set limits, and/or on other determiners.

[0027] Referring to **Figure 2**, an exemplary first cadence window 240 and second cadence window 255 are shown. The first cadence window 240 may be defined by a first cadence window minimum 230 and a first cadence window maximum 235. The second cadence window 255 may be defined by a second cadence window minimum 245 and a second cadence window maximum 250. In one embodiment, the cadence window minimums 230 and 245 and cadence window maximums 235 and 250 are determined by measuring lengths of time since the most recent step was counted. In one embodiment, this length of time is measured via the timer 170 of **Figure 1**. In other embodiments, other variables may be used to set the cadence window. For example, cadence windows may be determined by measuring cumulative amounts of acceleration that have been measured since the previous step was counted.

[0028] Returning to **Figure 2**, cadence windows may be used to count steps until an expected step is not encountered. In one embodiment, new cadence windows are determined periodically. In one embodiment, the cadence window is a dynamic cadence window that continuously updates as a user's cadence changes. For example, using a dynamic cadence window, a new cadence window length may be set after each step. (. The cadence window minimums may be determined by subtracting a value from the stepping period, and the cadence window maximums may be determined by adding a value to the stepping period. In one embodiment, the cadence window maximums are preset, and the cadence window minimums are updated after each step is counted. In one embodiment, the cadence window minimums are preset, and the cadence window maximums are updated after each step is counted. In one

embodiment, both the cadence window minimums and cadence window maximums are updated when a step is counted. In one embodiment, the current cadence window minimum is determined by subtracting 200 ms from the current stepping cadence period. In one embodiment, the cadence window minimum has a minimum value of 240 ms.

[0029] In the illustrated embodiment of **Figure 2**, a first step 217 is counted at 0.65 seconds, and a second step 232 is counted at approximately 1.15 seconds. The first cadence window 240 opens at approximately 0.4 seconds from the first step 217, and closes at approximately 0.8 seconds from the first step 217. As shown, the second step 232 falls within the first dynamic cadence window 240. A third step 233 falls within the second dynamic cadence window 255, which may have a second cadence window minimum 245 and second cadence window maximum 250 that are different from the first cadence window minimum 230 and first cadence window maximum 235. The illustrated second cadence window minimum is about 0.35 seconds from the second step 232, and the second cadence window maximum 250 is about 0.75 seconds from the second step 232. Other cadence window minimums and maximums are also possible. When motion criteria (e.g., threshold conditions) are met within a cadence window, a step is detected, whereas when motion criteria are met outside of the cadence windows no step is detected.

[0030] If no previous steps have been detected, there is no cadence minimum, and a step may be detected at any time that motion criteria are met. If fewer than the required number of steps to determine a dynamic cadence window have been detected, then the cadence window may have a default minimum and maximum value. In one embodiment, the cadence window has a default minimum of around 325 ms and

a default maximum of around 1000 ms. Once enough steps have been detected to determine a dynamic stepping cadence or period, the cadence window may be set to the determined stepping period plus or minus an error factor. In one embodiment, a count of between about two to about ten periodic human motions is sufficient to set a dynamic cadence window.

[0031] The cadence of any periodic human motion will generally not change more than a certain amount in a given time period. In one embodiment, the cadence window may be sufficiently wide to continue counting periodic human motions even when a stepping cadence changes. In one embodiment, the cadence window is narrower, and steps may not be counted when a stepping cadence changes. So as not to miss steps, once a new stepping cadence is detected, previous measurements may be examined to determine whether they register as steps under the new stepping cadence and a new cadence window. Therefore, steps may be counted even if they did not occur in the original cadence window. The cadence window may update dynamically to a user's actual cadence. Human cadences change within a known window of rates, and so steps can be differentiated from other noise. This may ameliorate and/or eliminate missed step counts due to changes in cadence.

[0032] In one embodiment, when steps repeatedly occur at a time different from the current stepping period, a new stepping period and a new cadence window are set. For example, when the stepping period is 0.7 seconds, and a step occurs about every 0.6 seconds enough times in a row, then the stepping period is changed to 0.6 seconds and a new cadence window is set based on the changed stepping period.

[0033] Returning to **Figure 1**, once the stepping period is detected, the cadence logic 132 may set one or more sample periods for the rolling average logic 135

to use based upon the stepping period. In one embodiment, the sample period(s) are set such that at least one sample period is approximately the length of, or longer than, the stepping period. In one embodiment, a sample period is set such that it is a multiple of the stepping period.

[0034] The rolling average logic 135 creates one or more rolling averages of accelerations as measured by the inertial sensor(s) over the sample period(s) set by the cadence logic 132. The rolling averages of accelerations may be used for determining an orientation of the electronic device, for determining thresholds to compare acceleration measurements against, and/or for other purposes. In one embodiment, the rolling average logic 135 creates a rolling average of accelerations for determining an orientation of the electronic device 100, the rolling average having a period that is at least the stepping period. In one embodiment, the rolling average logic creates a rolling average of accelerations for determining a lower threshold to compare acceleration measurements against, the rolling average having a sample period that is at least twice the stepping period.

[0035] The rolling average logic 135 may create one or more rolling averages of data other than accelerations. In one embodiment, the rolling average logic 135 creates a rolling average of stepping periods, where the rolling average is the rolling average time between steps. In one embodiment, the rolling average of stepping periods is calculated over the past four counted steps. The rolling average of the stepping periods may be used by the cadence logic 132 to determine a cadence window and a current stepping cadence.

[0036] In one embodiment, rolling averages may be maintained in registries that keep track of rolling average values and the number of samples that were used to

calculate current rolling average values. When a new measurement is taken, it can be incorporated into the previous rolling average value, and the registry can than be updated with a new rolling average value. Alternatively, the rolling averages may be maintained by buffering the measurements used to calculate the rolling averages. As the buffers fill, oldest measurement data can be discarded and replaced by new measurement data. The measurements in the buffer can be averaged after each measurement to determine a new rolling average.

[0037] In one embodiment, the dominant axis setting logic 140 determines an orientation of the electronic device 100 and/or the inertial sensor(s) within the electronic device 100. The orientation may be determined based upon the rolling averages of accelerations created by the rolling average logic 135. In one embodiment, once the orientation is determined, a dominant axis is assigned based upon the orientation. Determining an orientation of the electronic device 100 may include identifying a gravitational influence. The axis with the largest absolute rolling average may be the axis most influenced by gravity, which may change over time (e.g. as the electronic device is rotated). Therefore, a new dominant axis may be assigned when the orientation of the electronic device 100 and/or the inertial sensor(s) attached to or embedded in the electronic device 100 changes.

[0038] In one embodiment, the actual axis with the largest absolute rolling average over the sample period is assigned as the dominant axis. In alternative embodiments, the dominant axis does not correspond to one of the actual axes of the inertial sensor(s) in a current orientation, but rather to an axis that is defined as approximately aligned to gravity. In one embodiment, the dominant axis corresponds to a virtual axis that is a component of a virtual coordinate system. In one embodiment,

the dominant axis setting logic 140 assigns the dominant axis by performing a true gravity assessment, such as by doing trigonometric calculations on the actual axes based on the gravitational influence. In one embodiment, the dominant axis setting logic 140 assigns the dominant axis by comparing the gravitational influence to a data structure such as a lookup table, associative array, hash table, adjacency matrix, etc.

[0039] Returning to **Figure 1**, the step counting logic 130 may include a measurement selection logic 145, a cadence window 150, a measurement comparator 155, a threshold comparator 160, a step count buffer 165, and a mode logic 190. The measurement selection logic 145 may determine which measurements from the measurement buffer 125 to use to determine if a step has occurred. In one embodiment, the measurement selection logic 145 may monitor accelerations relative to the dominant axis, and select only those measurements with specific relations to the dominant axis for measurement. For example, only accelerations that are approximately parallel to the dominant axis may be selected, or alternatively, only accelerations that are approximately perpendicular to the dominant axis may be selected. In one embodiment, the measurement selection logic 145 selects only measurements of acceleration data along the dominant axis. In alternative embodiments, measurements of acceleration data along other axes may also be used. In one embodiment, measurements of acceleration along only the other axes are used.

[0040] Selected measurements may be forwarded to the measurement comparator 155 and the threshold comparator 160 to determine whether a step has occurred. The measurement comparator 155 may compare a current measurement to previous measurements. Based on this comparison, a current measurement may

qualify as a step if it has met certain comparison criteria, as discussed in more detail with reference to **Figure 8**.

[0041] In one embodiment, a motion cycle graph is maintained, and the current measurement is compared to the motion cycle graph. If the motion cycle graph indicates that the current measurement in relation to preceding measurements fits the profile of a step, then a step may be counted. Otherwise a step may not be counted.

[0042] Returning to **Figure 1**, the threshold comparator 160 disqualifies measurements from being counted as steps for failure to meet certain thresholds. In one embodiment, measurements must be larger than a lower threshold to qualify as a step. In one embodiment, the threshold comparator 160 compares measurements to an upper threshold. In one embodiment, only a measurement having a smaller absolute value of acceleration than the upper threshold and a higher absolute value than the lower threshold is counted as a step. The upper threshold and the lower threshold are discussed in more detail below with reference to **Figure 8**.

[0043] In one embodiment, the threshold comparator 160 and the measurement comparator 155 are combined into a single comparator. In one embodiment, other comparators may be used, such as a curve fitting comparator or a slope comparator.

[0044] The step count buffer 165 keeps track of probable steps. The exact behavior of the step count buffer 165 depends on which operating mode the electronic device 100 is in. In one embodiment, the operating mode that the electronic device is in is determined by the mode logic 190. In the illustrated embodiment, the mode logic 190 is a component of the step counting logic 130. In an alternative embodiment, the mode logic 190 is a separate logic from the step counting logic 130. In one

embodiment, operating modes include a non-active mode, in which periodic human motions are buffered, and an active mode, in which periodic human motions are counted. In one embodiment, operating modes include a sleep mode, a step counting mode, an entry mode, and an exit mode. Operating modes are discussed in greater detail below in reference to **Figure 3**.

[0045] Returning to **Figure 1**, when the threshold comparator 160 and measurement comparator 155 both indicate that a measurement is a step, then the step count buffer 165 is incremented by one. Depending on the mode, when the step count buffer 165 reaches a certain amount, the step count buffer 165 is emptied and the final count 175 is incremented by the amount of steps that were in the step count buffer 165. The number of steps that must be counted by the step count buffer 165 before they register as actual steps may vary from one to ten or more, depending on the current operating mode. The final step count 175 keeps track of the total number of steps that have occurred. In one embodiment, this data is transmitted to a server or remote database.

[0046] **Figure 3** shows a state diagram for the behavior 300 of a system for monitoring human activity, in accordance with one embodiment of the present invention. The system may have multiple operating modes (states) that are navigated between by processing logic that may comprise hardware (e.g., circuitry, dedicated logic, programmable logic, microcode, etc.), software (such as instructions run on a processing device), or a combination thereof. In one embodiment, behavior 300 is the behavior of the electronic device 100 of **Figure 1**.

[0047] The behavior 300 may include four operating modes for monitoring human activity: a sleep mode, an entry mode, a stepping mode, and an exit mode. In

alternative embodiments, a different number of modes may be used. In one embodiment, only two modes are used: active mode and non-active mode. The active mode is entered once continuous steps within the cadence window have been identified, while the non-active mode is used for all other states. In alternative embodiments, multiple inactive modes and/or active modes are used. To navigate between modes, certain conditions must be met. The conditions may include exit conditions for terminating an active mode and entry conditions for initiating inactive modes. Each mode may have different exit and entry conditions.

[0048] Use of different conditions for different operating modes increases the reliability of the device that is monitoring the human activity. For example, once an object (e.g., a person) is moving, they are more likely to remain moving than to stop. Likewise, if a person is not moving, they are more likely not to move than to begin moving. These principles can be applied by requiring more stringent conditions to be met for a device to initiate a walking (stepping) mode than to continue the walking mode. The different modes may each have rules that reflect what is more likely to happen for subsequent measurements. This may reduce or eliminate the number of uncounted steps and/or false step counts.

[0049] Referring to **Figure 3**, modes 300 in one embodiment include a sleep mode 305, an entry mode 315, a stepping mode 325, and an exit mode 335. In one embodiment, the power level of the system or device is linked to these modes.

[0050] The first mode initiated is the sleep mode 305. When no activity (acceleration) is detected, the system remains in sleep mode 305. When acceleration is detected, an entry mode 315 is initiated.

[0051] Once in entry mode 315, acceleration may be monitored to detect steps. When N steps are detected in appropriate cadence windows, a stepping mode 325 is initiated. If N steps are not detected within a period of time, sleep mode is reinitiated. In one embodiment, sleep mode is only initiated if no motion is detected.

[0052] Once in stepping mode 325, acceleration data is monitored to count steps according to a predefined set of rules or motion criteria. According to one of these criteria, steps are expected to occur within a set interval (e.g., within a cadence window). When a step is counted within the set interval, then the stepping mode 325 is continued. When a step is not detected within the set interval, an expected step has not occurred, and an exit mode 335 is initiated.

[0053] In exit mode 335, processing logic determines whether a predetermined number of steps (X) are detected at a particular cadence. The predetermined number of steps X may be the same as, or different from, the number of steps N. When X steps are detected in a cadence, stepping mode 325 is reinitiated. When X steps are not detected within a period of time, entry mode 315 is reinitiated.

[0054] **Figure 4** illustrates a flow diagram for a method 400 of operating an electronic device in sleep mode, in accordance with one embodiment of the present invention. In one embodiment, method 400 corresponds to the sleep mode 305 of **Figure 3**. In one embodiment, the method 400 may begin when no relevant acceleration has been detected for a predetermined time interval, or when no steps have been detected for a predetermined time interval. In one embodiment, when no acceleration above a threshold value is detected for a set period of time, the sleep function is initiated. In another embodiment, when a motion signature indicative of an activity that does not need to be monitored is detected, the sleep function is initiated.

For example, when the motion signature of driving is detected, the sleep function may be initiated. The time period that elapses before the sleep mode is initiated may be a fixed value, or it may be adjusted automatically by processing logic or based on user input (e.g. in response to a user selection of desired battery longevity verses desired performance, or based on the last measured cadence window).

[0055] Referring to **Figure 4**, method 400 begins with setting a sleep mode sampling rate (block 405). In one embodiment, a low sampling rate is set. This reduces power consumption and prolongs battery life. In one embodiment, the sleep mode sampling rate is a fixed value. In alternative embodiments, the sleep mode sampling rate can be modified automatically by processing logic based on certain criteria such as time of day, user behavior patterns, etc., or based on user input.

[0056] In one embodiment, a sampling function is periodically executed in sleep mode, wherein the sampling function samples acceleration data at a set sampling rate for a set time period. For example, the sampling function may be executed every ten seconds for a duration of one second, and a sampling rate of fifty measurements per second may be set for that one second of operation. In one embodiment, the sampling function repeats at a relatively slow rate (e.g., once every 10 seconds), and the sampling rate within the sampling function is relatively high (e.g., 50 Hz). The sampling function may be used to detect unwanted motion signatures, or to maintain a device in low power sleep mode, for example, while a user is driving in a car. .

[0057] In one embodiment, the sleep mode sampling rate is set to zero. The sleep mode may be set to zero, for example, when an inertial sensor has 'inertial wakeup' functionality. Inertial wakeup functionality enables processing logic to switch from sleep mode to entry mode when an acceleration exceeding a set threshold is

detected. The inertial wakeup may be used to simultaneously exit sleep mode and power-up additional functionality.

[0058] At block 410, measurements of acceleration data are taken. At block 415, processing logic determines whether or not relevant acceleration is detected. Relevant acceleration includes acceleration that meets certain relevancy criteria. In one embodiment, the relevancy criteria include a lower threshold and an upper threshold. In alternative embodiments, other relevancy criteria may also be used, such as a requirement that acceleration be continuously measured for a preset time period.

[0059] When no relevant acceleration is detected, or when the 'inertial wakeup' pin has not triggered (for inertial sensors having 'inertial wakeup functionality'), sleep mode continues, and further measurements of acceleration data are taken at the set sleep mode sampling rate (block 410). When acceleration is detected, sleep mode is terminated and entry mode is initiated (block 420). In one embodiment, the acceleration that is detected and its rate of change must meet certain criteria to terminate sleep mode.

[0060] **Figure 5** illustrates a flow diagram for a method 500 of operating an electronic device in entry mode, in accordance with one embodiment of the present invention. In one embodiment, method 500 corresponds to the entry mode 315 of **Figure 3**. The entry mode may be initiated when a user first begins an activity in which steps may be detected. In one embodiment, the method 500 begins when any relevant acceleration is detected. In one embodiment, entry mode is initiated when a measurement of acceleration that meets certain criteria has been detected. In one embodiment, method 500 is initiated when a sleep mode is terminated.

[0061] Referring to **Figure 5**, method 500 begins by setting the sampling rate to a stepping sampling rate (block 504). The stepping sampling rate is set to facilitate accurate measurements of steps, and may be a fixed or a dynamically variable rate. A variable sampling rate may automatically adjust depending on a period of a detected stepping cadence, may be user adjusted, may adjust based on applications being run by processing logic, or by other means. The stepping sampling rate may be set to anywhere between about 10 and about 200 Hz. In one embodiment, the stepping sampling rate is set to about 15 to 40 Hz.

[0062] At block 510, a first step is recognized. Since no previous steps have been measured, and there is no cadence window, the first step may be recognized at any time. Once a first step is recognized, a default cadence window is set (block 514). The default cadence window may have a minimum and maximum such that steps will be counted for most or all possible stepping cadences, whether a user is walking slowly or sprinting. In one embodiment, the default cadence window has a minimum of around 325 ms and a maximum of around 1000 ms.

[0063] In one embodiment, an initial default value is set wide enough to accommodate all users, and is then dynamically adjusted to match the specific user in question. Processing logic may 'learn' (adapt to) a particular user, and may become more accurate as steps are counted. Processing logic that has the ability to learn or adapt to different users may create an individualized profile for each user. Multiple profiles may also be created for each user, the different profiles reflecting different user activity. For example, a first profile might be created for a user's running and a second profile may be created for a user's walking. Processing logic may switch between different profiles automatically, or manually based on user input. In one embodiment,

processing logic compares a current cadence and/or motion cycle pattern to stored profiles. When a current cadence or motion cycle pattern matches that of a stored profile, that profile is activated.

[0064] At block 520, a buffered step count is set to one. At block 524, processing logic determines whether an additional step is recognized. An additional step may be recognized if a particular measurement of acceleration meets all the necessary criteria. One embodiment of these criteria is discussed below with reference to **Figure 8**.

[0065] Returning to **Figure 5**, if an additional step is recognized, method 500 continues to block 560. If no additional steps are recognized, then processing logic determines whether the time is still within the cadence window (block 530). If there is still time within the cadence window, the process returns to block 524. If the cadence window has closed, then the buffered step count is reset to zero (block 534). The process then continues to block 540.

[0066] At block 540, processing logic determines whether any relevant acceleration is detected. If no relevant acceleration is detected, then sleep mode is initiated (block 544). If some relevant acceleration is detected, then processing logic returns to block 510 to await recognition of another first step. If at block 540 an additional step was recognized, the process continues to block 560.

[0067] At block 560, an additional step is added to the buffered step count. Processing logic then checks whether there are M counts in the buffered step count (block 564). In one embodiment, M is an integer value between about 4 and 10. If there are not at least M steps in the buffered step count, then the process returns to block 524.

[0068] If the buffered step count is equal to or greater than M, then the processing logic checks whether the cadence window is set to the default (block 570). If the cadence window is still set to the default, then a new cadence window is set (block 574) based on a stepping cadence of the M steps measured. The process then returns to block 524. If the cadence window is not set to the default, then processing logic continues to block 580. In an alternative embodiment, once there are M steps in the buffered step count, the cadence window may be adjusted for each additional step that is recognized.

[0069] At block 580, processing logic checks whether there are N steps in the buffered step count (block 580), where N may be an integer value greater than M. When there are not yet N steps in the buffered step count, the process returns to block 524 to continue in entry mode. When the number of steps in the buffered step count reaches N, the buffered steps are added to an actual or final step count, and a stepping mode is entered into (block 584).

[0070] **Figure 6** illustrates a flow diagram for a method 600 of operating an electronic device in stepping mode, in accordance with one embodiment of the present invention. In one embodiment, method 600 corresponds to the stepping mode 325 of **Figure 3**. The stepping mode may be initiated when a user has been walking long enough for a buffered step count to fill. In one embodiment, method 600 is initiated when an entry mode is terminated, and/or when an exit mode is terminated.

[0071] Referring to **Figure 6**, method 600 begins by setting a cadence window (block 610). The cadence window may be set based on previous measurement data. In one embodiment, the cadence window is set based on a rolling average of stepping periods. In one embodiment, the cadence window may be identical to the

cadence window used during entry mode. Once the cadence window is set, measurement data is checked to determine whether an additional step is recognized (block 615). If an additional step is recognized, then it is added to the final or actual step count (block 620). If no additional step is recognized, then processing logic determines whether the current measurement was taken within the cadence window (block 625). If the cadence window has not elapsed, the process returns to block 615. If the cadence window has elapsed, then an expected step was not counted, and an exit mode is initiated (block 630).

[0072] **Figure 7** illustrates a flow diagram for a method 700 of operating an electronic device in exit mode, in accordance with one embodiment of the present invention. In one embodiment, method 700 corresponds to the exit mode 335 of **Figure 3**. The exit mode may be entered into when an expected step is not identified in stepping mode.

[0073] In one embodiment, the requirement(s) for changing from exit mode to stepping mode are less strict than the requirement(s) for switching from entry mode to stepping mode. Processing logic may assume that when a user has recently taken a step, the user is most likely to take another step. Processing logic may also assume that if a user has not just taken a step, it is most likely that they will not take one. These assumptions may be implemented by imposing more stringent requirements to switch from entry mode to stepping mode than to change from exit mode to stepping mode.

[0074] An expected step may not be identified, for example, when a user stops walking, when extraneous movements such as gestures are made that interfere with the step count, or when a device orientation is changed as a step occurs. In one

embodiment, the exit mode assumes that a step has been missed, so that if the exit mode determines that a user is still walking, the originally uncounted step is not missed.

[0075] The process begins by initiating a step timer (block 705). The step timer measures the amount of time that has passed since a step has been identified. In one embodiment, the step timer is a countdown timer that terminates exit mode when the timer reaches zero. In one embodiment, the step timer starts counting when a cadence window minimum is reached, and stops counting when a cadence window maximum is reached. In an alternative embodiment, the step timer starts counting as soon as the exit mode is initiated, and stops counting when a cadence window maximum is reached. In one embodiment, the step timer starts counting at 240 ms from the time that the expected step should have occurred.

[0076] At block 710, a step is added to a buffered step count. At block 715, processing logic determines whether the buffered step count is equal to X, where X of the number of identified steps in exit mode. In one embodiment, X is between 3 and 8. If the buffered step count is equal to X, then the buffered steps are added to the actual step count and stepping mode is reinitiated (block 720). If the buffered step count is not equal to X, then processing logic proceeds to block 725.

[0077] At block 725, processing logic determines whether the step timer has timed out (allotted time has elapsed). In one embodiment, the step timer times out when no steps are counted within a cadence window. In one embodiment, the step timer times out when no steps are counted in two or more cadence windows. If the allotted time has elapsed, then the buffered step count is cleared, and entry mode is initiated (block 730). If the allotted time has not elapsed, then processing logic determines whether an additional step is recognized (block 735). If a step is

recognized, then the step timer is reset (block 705), the buffered step count is incremented by one (block 710), and on the process continues to block 715. If a step is not recognized, then processing logic returns to block 725 to determine whether the step timer has elapsed. In an alternative embodiment, the step timer is not reset when an additional step is recognized, and the buffered step count must reach X in the time initially allotted by the step timer. In that instance, the step timer is set at greater than X times the cadence window.

[0078] **Figure 8** illustrates a flow diagram for a method 800 of recognizing a step, in accordance with one embodiment of the present invention. In one embodiment, method 800 may be executed by blocks 510 and 524 of **Figure 5**, block 615 of **Figure 6** and block 735 of **Figure 7**. In one embodiment, method 800 is performed by electronic device 100 of **Figure 1**.

[0079] Referring to **Figure 8**, method 800 begins with measurements of acceleration data being taken (block 805). Measurements are taken according to a sampling rate, which may vary from about one measurement per second to many measurements a second, depending on the operating mode being used.

[0080] At processing block 810, in one embodiment measurements are filtered. Measurements can be filtered to remove high frequency data and/or low frequency data. In one embodiment, what data to filter depends on the type of user activity detected. At processing block 812, in one embodiment the inertial sensor is oriented by assigning a dominant axis. Assigning a dominant axis may include calculating rolling averages of acceleration and assigning the dominant axis based on the rolling averages of acceleration.

[0081] At block 815, processing logic determines whether a measurement is within a cadence window. If the measurement is not within a cadence window, then no step may be recognized or counted for that measurement (block 840). If the measurement is within the cadence window, the process continues to block 820.

[0082] At block 820, processing logic determines whether acceleration along the dominant axis is greater than a lower threshold. If the measurement is not greater than the lower threshold, no step may be recognized or counted for that measurement (block 840). If the measurement is greater than the lower threshold, the processing logic continues to block 825.

[0083] In one embodiment, the measurement may qualify as a step if it is the first measurement that crosses the lower threshold. In an alternative embodiment, the measurement with the greatest acceleration within a cadence window (e.g. a peak) may be counted as a step.

[0084] The lower threshold may be based on a rolling average of accelerations as determined by the rolling average logic 135 of **Figure 1**. In one embodiment, the rolling average of accelerations that is used to set the lower threshold has a sample period that is about twice the stepping period. In alternative embodiments, other sample periods are used for the rolling average.

[0085] In one embodiment, the lower threshold is set such that an absolute value of a measurement must exceed an absolute value of the rolling average to be counted as a step. Multiple lower thresholds may be set, and a current measurement may be compared to one or more of the lower thresholds depending on operating conditions. For example, a negative lower threshold may be used if acceleration is detected in a negative direction (e.g., when device is upside down), and a positive lower

threshold may be used if acceleration is detected in a positive direction (e.g., device is right-side up). In one embodiment, absolute values may be used.

[0086] In one embodiment, the measurement must exceed the rolling average by a set margin. The margin may be set automatically by processing logic, or it may vary based on the orientation of the electronic device or inertial sensor(s), user input, and/or other criteria.

[0087] In one embodiment, the lower threshold is adjusted based on an orientation of the electronic device and/or an orientation of the inertial sensor(s) within the electronic device. If an axis is closely aligned with gravity, a first threshold may be used. If no axes are closely aligned to gravity, other thresholds may be used. In one embodiment, a variable threshold is used, the variable threshold having a larger value when an axis is closely aligned to gravity, and progressively lower values as an axis most closely aligned with gravity is moved out of line with gravity. The variable threshold can be implemented using a data structure (e.g., a lookup table, hash table, adjacency matrix, etc.), comparison to a virtual axis, or by performing trigonometric calculations.

[0088] At block 825, processing logic determines whether acceleration along the dominant axis is greater than previous measurements. In one embodiment, acceleration along the dominant axis for a present measurement is compared to the previous 1 to 4 measurements.

[0089] In one embodiment, the absolute value of the present measurement is compared to the absolute value of the previous measurement or measurements. By comparing the absolute value of acceleration along the dominant axis to previous absolute value(s) of acceleration, processing logic may determine whether the

acceleration of a user is moving away from the influence of gravity (e.g. whether a person is lifting a foot from the ground rather than planting it on the ground). In one embodiment, a measurement qualifies as a step when it reflects that the acceleration of a user is moving away from gravity. Alternatively, a current measurement may qualify as a step if it has an absolute value that is less than absolute values of the previous measurements, indicating that the acceleration of a user is moving towards gravity.

[0090] If the absolute value of the current measurement is not greater than the absolute values of the measurements compared to, then no step may be recognized or counted for that measurement (block 840). If the absolute value of the measurement is greater than the absolute values of previous measurements, then the process continues to block 830.

[0091] At block 830, processing logic determines whether acceleration for a particular measurement is lower than an upper threshold. In one embodiment, only acceleration along the dominant axis is compared to the upper threshold. In one embodiment, accelerations along all axes are compared to the upper threshold. If the current measurement is not lower than the upper threshold, then no step may be recognized or counted for that measurement (block 840). If the measurement is lower than the upper threshold, then a step may be counted (block 835). The upper threshold may be set to prevent sudden accelerations such as taps from being counted as steps.

[0092] Blocks 815, 820, 825 and 830 show four criteria that may be used to accurately determine whether user has walked or run one step. These criteria may be dynamic motion criteria that are updated continuously as current conditions change (e.g., as an inertial sensor changes orientation, as a user changes cadence, etc.).

Alternatively, these criteria may be static criteria that are preset, or criteria that may be changed through user input.

[0093] As noted above, though embodiments of the present invention are described in reference to steps, the present invention equally applies to other periodic human motions. Other criteria may also be used in addition to, or in place of, those listed above. These criteria may reduce or eliminate the number of false steps counted and/or the number of missed steps. Examples of other criteria include specific rates of change in acceleration between measurements, specific shapes and/or sharpness of acceleration peaks for motion cycles, particular amplitudes of periodic human motions, etc. These and other criteria may be applied to embodiments of the present invention.

[0094] **Figure 9** illustrates a flow diagram for one embodiment of a method 900 of orienting an inertial sensor. In one embodiment, the method 900 is executed by block 812 of **Figure 8**.

[0095] Referring to **Figure 9**, method 900 begins with detecting a stepping period (block 910). In one embodiment, the method 900 may begin by detecting a stepping cadence. At block 915, rolling averages of accelerations are created. The rolling averages of accelerations may be created based on the stepping period (or stepping cadence). In one embodiment, multiple rolling averages of accelerations are created.

[0096] At block 920, a dominant axis is assigned. In one embodiment, the dominant axis is assigned after identifying a gravitational influence. The gravitational influence may be identified by calculating total acceleration based upon the acceleration on each axis. In one embodiment, the percentage of the total acceleration

can then be assigned to each axis and an approximate device orientation can be determined.

[0097] In the foregoing description, numerous specific details have been set forth such as examples of specific systems, languages, components, etc. in order to provide a thorough understanding of the present invention. It will be apparent, however, to one skilled in the art that these specific details need not be employed to practice the present invention. In other instances, well known materials or methods have not been described in detail in order to avoid unnecessarily obscuring the present invention.

[0098] The present invention may be performed by hardware components or may be embodied in machine-executable instructions, which may be used to cause a general-purpose or special-purpose processor programmed with the instructions to perform the method described above. Alternatively, the method may be performed by a combination of hardware and software.

[0099] The present invention may be provided as a computer program product, or software, that may include a machine-readable medium having stored thereon instructions, which may be used to program a computer system (or other electronic devices) to perform a process according to the present invention. The machine-readable medium may include, but is not limited to, floppy diskettes, optical disks, CD-ROMs, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, magnetic or optical cards, flash memory, or other type of media or machine-readable mediums suitable for storing electronic instructions.

[00100] In the foregoing specification, the invention has been described with reference to specific exemplary embodiments thereof. It will, however, be evident that

various modifications and changes may be made thereto without departing from the broader spirit and scope of the invention as set forth in the appended claims. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

What is claimed is:

1. A method of monitoring human activity using an inertial sensor, comprising:

continuously determining an orientation of the inertial sensor;

assigning a dominant axis;

updating the dominant axis as the orientation of the inertial sensor changes; and

counting periodic human motions by monitoring accelerations relative to the dominant axis.

2. The method of claim 1, further comprising:

using acceleration measurements along only the dominant axis to count steps.

3. The method of claim 1, further comprising:

maintaining a cadence window, wherein the cadence window is continuously updated as an actual cadence changes; and

counting a periodic human motion when an acceleration measurement that meets motion criteria is within the cadence window.

4. The method of claim 3, wherein at least one of the motion criteria is a dynamic motion criterion, the dynamic motion criterion being continuously updated to reflect current conditions.

5. The method of claim 4, wherein the dynamic motion criteria includes at least a lower threshold, wherein the lower threshold is adjusted based on at least one of a rolling average of accelerations and the orientation of the inertial sensor.

6. A method of monitoring human activity using an inertial sensor, comprising:

running a device that includes the inertial sensor in a non-active mode, in which periodic human motions are buffered;

switching the device from the non-active mode to an active mode, after identifying a number of periodic human motions within appropriate cadence windows; and

during the active mode, counting each of the periodic human motions to enable the monitoring of human activity.

7. The method of claim 6, wherein running the device in a non-active mode comprises running the device in one of an exit mode and an entry mode.

8. The method of claim 7, wherein:

a requirement for switching the device from the exit mode to the active mode is lower than a requirement for switching the device from the entry mode to the active mode.

9. The method of claim 6, further comprising:

switching the device from the active mode to the non-active mode when a number of expected periodic human motions are not identified in the appropriate cadence windows.

10. The method of claim 6, further comprising:

switching from a sleep mode to the non-active mode of operation when an acceleration is detected.

11. An inertial sensor based device, comprising:

a dominant axis logic, to continuously determine an orientation of a device, to assign a dominant axis, and to update the dominant axis as the orientation of the device changes; and

a counting logic to count periodic human motions by monitoring accelerations relative to the dominant axis.

12. The device of claim 11, wherein:

The counting logic uses acceleration measurements along only the dominant axis to count steps.

13. The device of claim 11, further comprising:

a cadence logic to continuously update a dynamic cadence window; and

the counting logic to count a periodic human motion when an acceleration measurement that meets motion criteria is taken within the cadence window.

14. The device of claim 11, further comprising:

a comparator, to compare measurements of acceleration to dynamic motion criteria, the dynamic motion criteria being continuously updated to reflect current conditions; and

the counting logic to count a periodic human motion when the measurements of acceleration satisfy the dynamic motion criteria.

15. A device including an inertial sensor, comprising:

a counting logic, to identify and count periodic human motions;

a mode logic, to switch the device from a non-active mode to an active mode after a number of periodic human motions are detected within appropriate cadence windows by the counting logic; and

a buffer, to buffer periodic human motions when the device is in the non-active mode.

16. The device of claim 15, wherein the non-active mode comprises one of an exit mode and an entry mode.

17. The device of claim 16, wherein:

a requirement for the mode logic to switch the device from the exit mode to the active mode is lower than a requirement for the mode logic to switch the device from the entry mode to the active mode.

18. The device of claim 15, wherein:

the mode logic to switch the device from the active mode to the non-active mode when a number of expected periodic human motions are not identified in the appropriate cadence windows.

19. The device of claim 15, further comprising:

a cadence logic, to set the appropriate cadence windows.

20. The device of claim 19, wherein the cadence logic adjusts the cadence windows based on a measured cadence associated with the periodic human motion.

ABSTRACT

A method for monitoring human activity using an inertial sensor includes continuously determining an orientation of the inertial sensor, assigning a dominant axis, updating the dominant axis as the orientation of the inertial sensor changes, and counting periodic human motions by monitoring accelerations relative to the dominant axis.

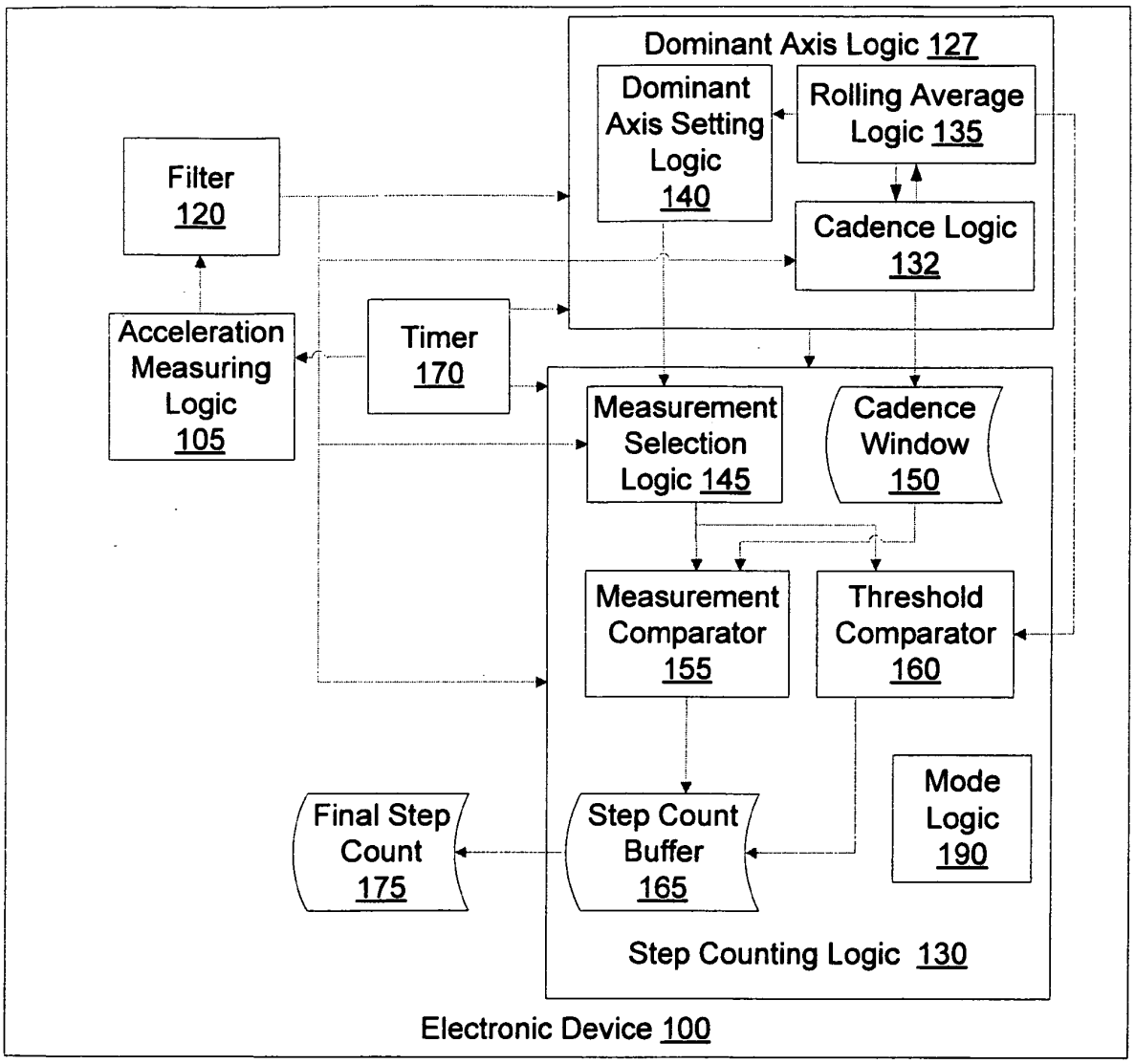
Dominant Axis Logic 127
Dominant Axis Setting Logic 140
Rolling Average Logic 135
Cadence Logic 132
Filter 120
Acceleration Measuring Logic 105
Timer 170
Measurement Selection Logic 145
Cadence Window 150
Measurement Comparator 155
Threshold Comparator 160
Mode Logic 190
Final Step Count 175
Step Count Buffer 165
Step Counting Logic 130
Electronic Device 100

Figure 1

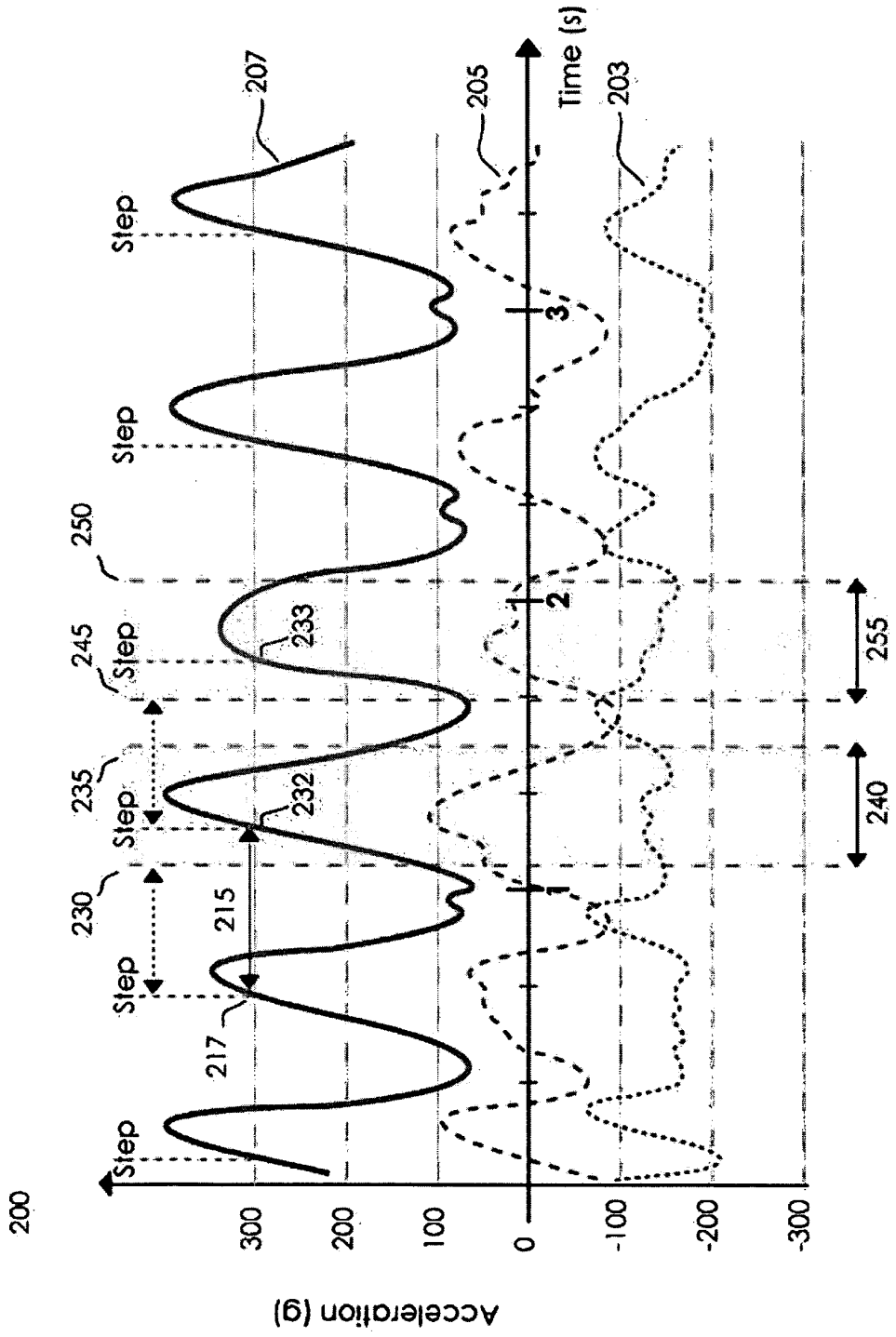
200
Acceleration (g)
300
200
100
0
-100
-200
-300
Time (s)
1
2
3
Step
207
205
203
250
245
233
235
232
230
215
217
255
240

Figure 2

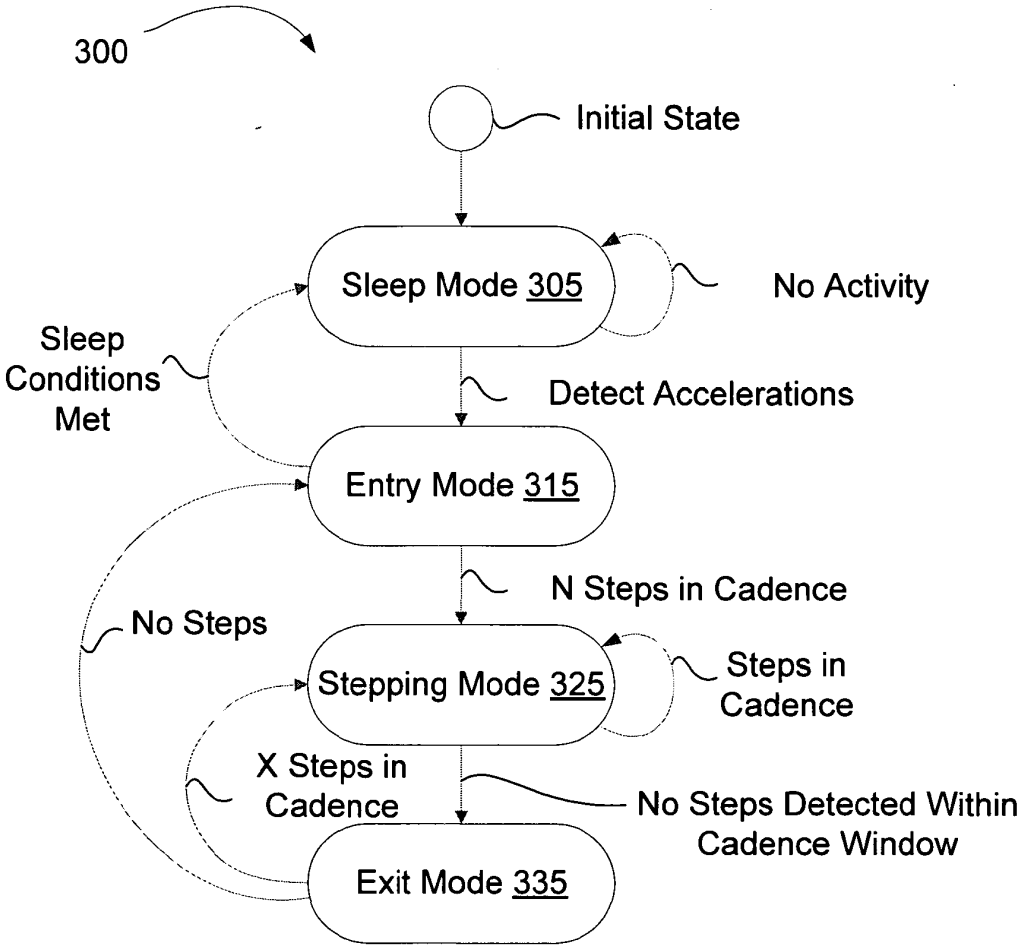
300
Initial State
Sleep Mode 305
No Activity
Sleep Conditions Met
Detect Accelerations
Entry Mode 315
N Steps in Cadence
No Steps
Stepping Mode 325
Steps in Cadence
X Steps in Cadence
No Steps Detected Within Cadence Window
Exit Mode 335

Figure 3

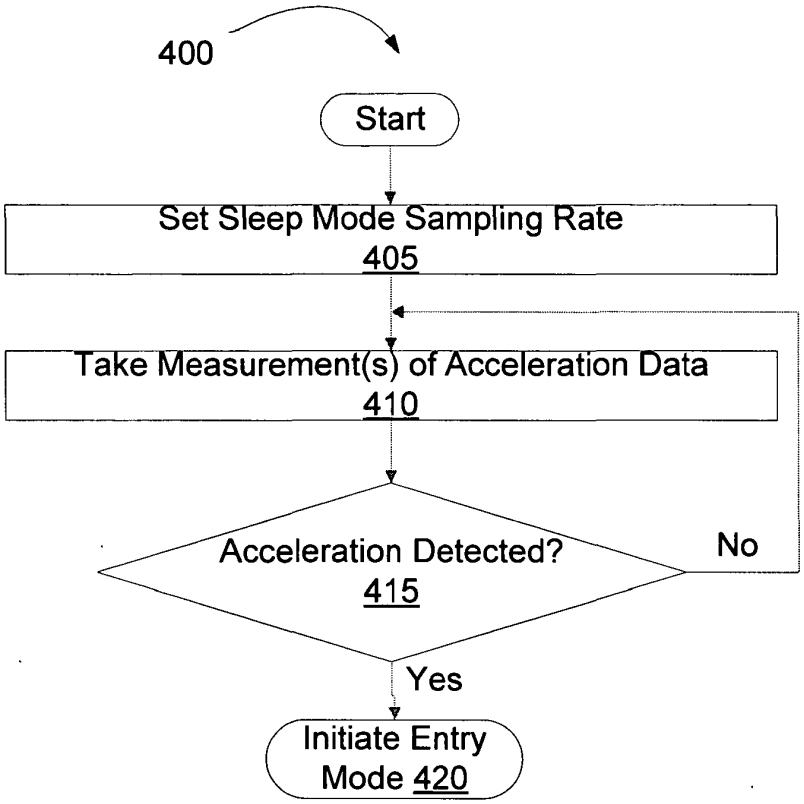
400
Start
Set Sleep Mode Sampling Rate
405
Take Measurement(s) of Acceleration Data
410
Acceleration Detected?
415
No
Yes
Initiate Entry
Mode 420

Figure 4

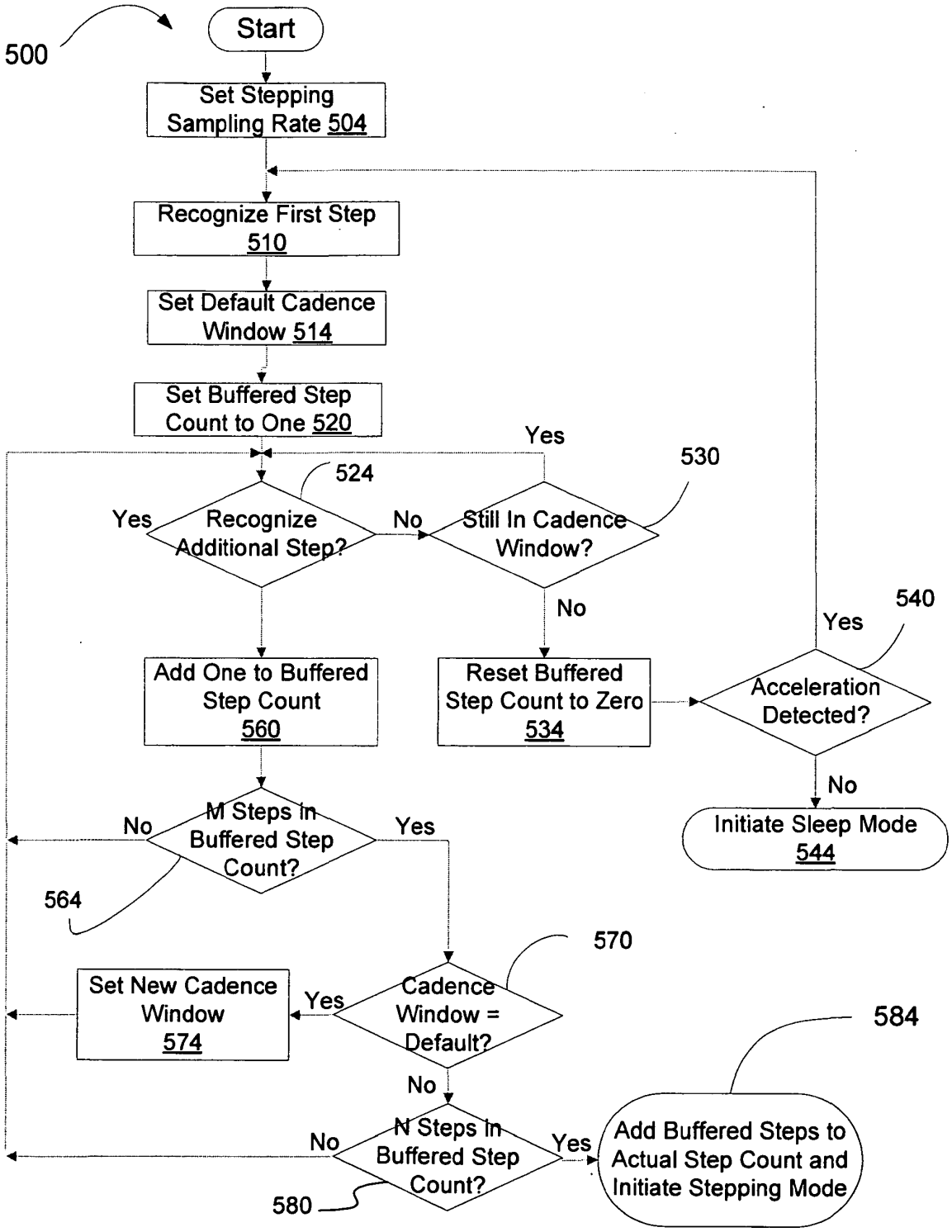
500
Start
Set Stepping Sampling Rate 504
Recognize First Step 510
Set Default Cadence Window 514
Set Buffered Step Count to One 520
524
Yes
Recognize Additional Step?
No
Still In Cadence Window?
530
Yes
No
Add One to Buffered Step Count 560
Reset Buffered Step Count to Zero 534
Acceleration Detected?
540
Yes
No
Initiate Sleep Mode 544
No
M Steps in Buffered Step Count?
Yes
564
570
Set New Cadence Window 574
Yes
Cadence Window = Default?
584
No
No
N Steps in Buffered Step Count?
Yes
Add Buffered Steps to Actual Step Count and Initiate Stepping Mode
580

Figure 5

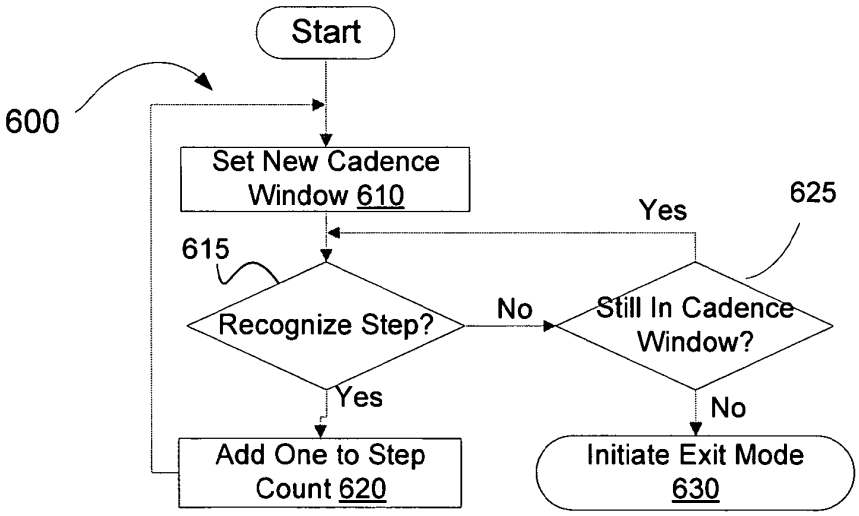
Start
600
Set New Cadence Window 610
615
Recognize Step?
No
Still In Cadence Window?
625
Yes
Yes
No
Add One to Step Count 620
Initiate Exit Mode 630

Figure 6

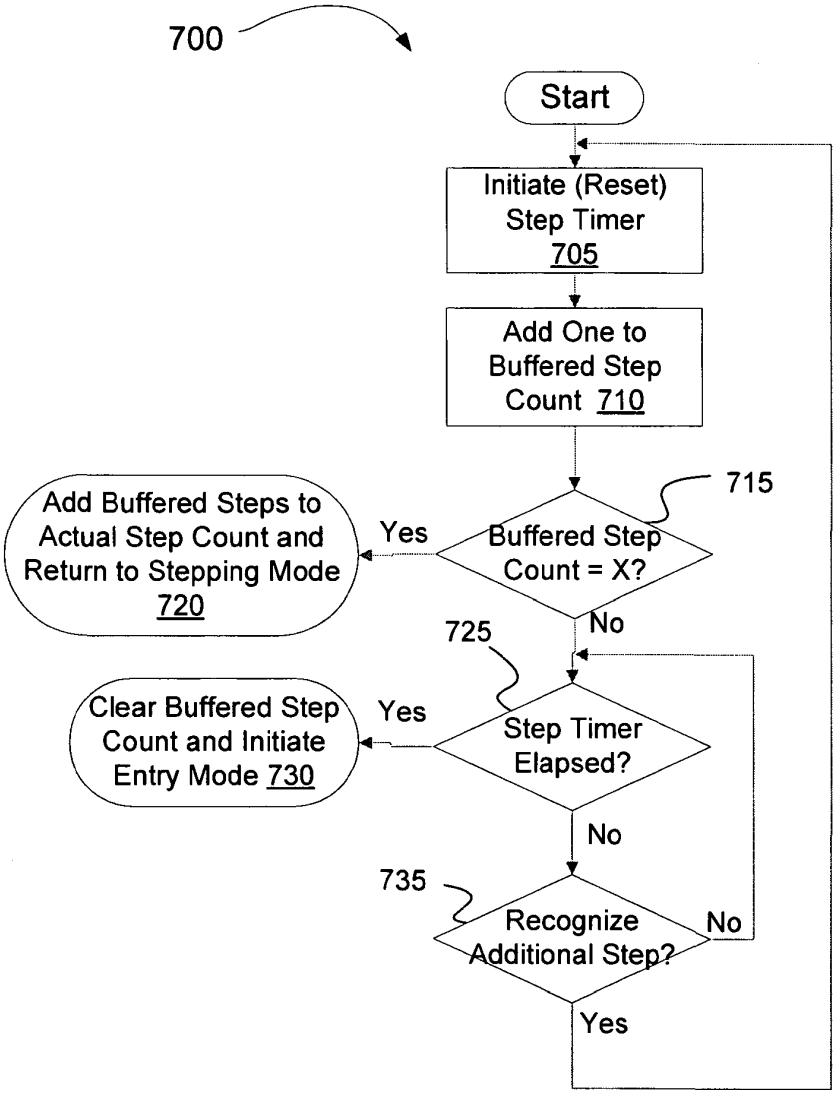
700
Start
Initiate (Reset) Step Timer 705
Add One to Buffered Step Count 710
715
Buffered Step Count = X?
Yes
Add Buffered Steps to Actual Step Count and Return to Stepping Mode 720
No
725
Step Timer Elapsed?
Yes
Clear Buffered Step Count and Initiate Entry Mode 730
No
735
Recognize Additional Step?
No
Yes

Figure 7

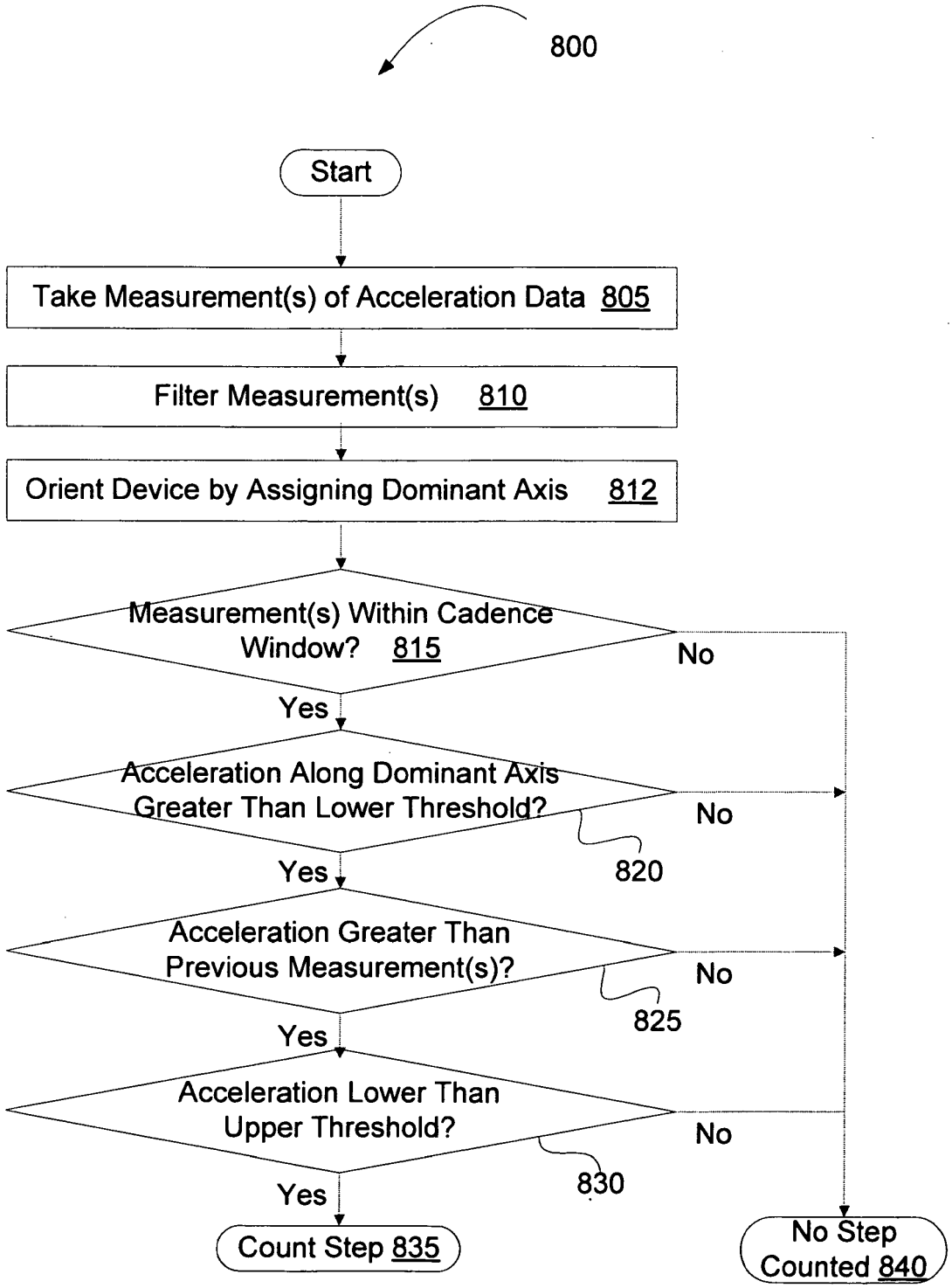
800
Start
Take Measurement(s) of Acceleration Data 805
Filter Measurement(s) 810
Orient Device by Assigning Dominant Axis 812
Measurement(s) Within Cadence Window? 815
No
Yes
Acceleration Along Dominant Axis Greater Than Lower Threshold?
No
820
Yes
Acceleration Greater Than Previous Measurement(s)?
No
825
Yes
Acceleration Lower Than Upper Threshold?
No
830
Yes
Count Step 835
No Step Counted 840

Figure 8

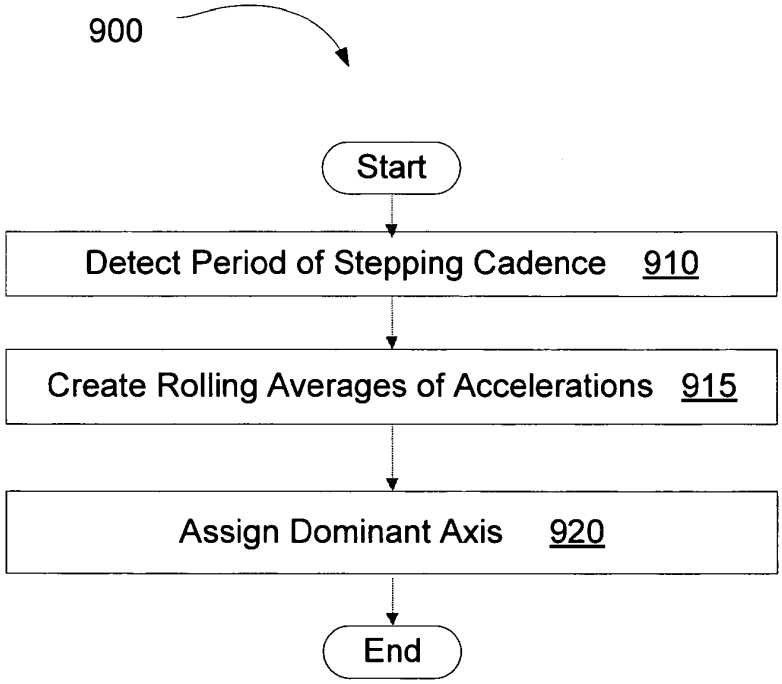
900
Start
Detect Period of Stepping Cadence 910
Create Rolling Averages of Accelerations 915
Assign Dominant Axis 920
End

Figure 9

PTO/SB/06 (12-04)
Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Date: 01/26/10

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/694,135

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	330
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	540
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	220
TOTAL CLAIMS (37 CFR 1.16(i))	11 minus 20 =		x$26		OR	x$52	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	x$110			x$220	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195			390	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1090

APPLICATION AS AMENDED – PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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