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[Continued on nextpage]

(54) Title: FEEDBACK SIGNALS FROM IMAGE DATA OF ATHLETIC PERFORMANCE

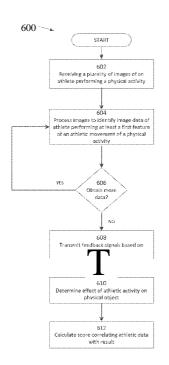


FIG. 6

(57) Abstract: Aspects of this disclosure relate to improving an athlete's ability to synchronize the movement of their body in time. Certain embodiments provide a feedback system that allows an athlete (or another individual, such as a trainer) to comprehend and optimize the timing of one or more components or features of an athletic movement. Image data, such as video, of an athlete performing physical activity may be utilized (alone or in combination with nonimage data) may be used to generate and emit real-time feedback signals to provide an indication of tempo to the athlete. Still further aspects relate to using image and/or other sensor data to detect improper timing and/or movements of an athlete, and in response generating real-time feedback signals.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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PCT/US2014/023313 a. classification of subject matter INV. G06K9/00 A61I A61B5/00 A63B22/00 ADD. According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED searched (classification system followed by classification symbols) Minimum documentation G06K A61B A63B Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal , WPI Data C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. χ Jean-Marc Pelleti er: "Sonified Motion 1,2, 4-10,20 Flow Fields as a Means of Musical Expressi on", 8TH INTERNATIONAL CONFERENCE NEW INTERFACES FOR MUSICAL EXPRESSION, 5 June 2008 (2008-06-05), pages 1-6, XP055124325, Retri eved from the Internet: URL: http://nime2008. casapagani ni .org/docum ents/ Proceedi ngs/ Papers/ 191 .pdf [retri eved on 2014-06-19] Secti on 3.1, Secti on 3.2, Secti on 3.3, Secti on 4 ____ _/_ · X See patent family annex. * Special categories of cited documents : "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand "A" document defining the general state of the art which is not considered the principle or theory underlying the invention to be of particular relevance "E" earlier application or patent but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive filing date "L" documentwhich locumentwhich may throw doubts on priority claim(s) orwhich is cited to establish the publication date of another citation or other step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be special reason (as specified) considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art "O" document referring to an oral disclosure, use, exhibition or other "P" document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 22/09/2014 24 June 2014 Name and mailing address of the ISA/ Authorized officer European Patent Office, P.B. 5818 Patentlaan 2

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Boltz, Sylvain

International application No
PCT/US2014/023313

C(Continuat	ion). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Jeffrey E Boyd ET AL: "MULTI-DIMENSIONAL SYNCHRONIZATION FOR RHYTHMIC SONI FICATION", Proceedi ngs of the 18th Internati onal Conference on Audi tory Di spl ay, 18 June 2012 (2012-06-18) , pages 1-7 , XP055124647 , Retri eved from the Internet: URL: https://smartech .gatech .edu/j spui /bi t s tream/1853/44406/57/Boyd I CAD2012.pdf [retri eved on 2014-06-23J Secti on 4, Secti on 5	1-10,20
A	Jordi Bolibar: "Kinect Audio-Runner: Audio Feedback for Improvi ng Performance in Long-Di stance Running", Master Thesis, 31 December 2012 (2012-12-31), pages 1-64, XP055124323, Retri eved from the Internet: URL: http://kiosk.nada.kth.se/utbildning/grukth/exjobb/rapportlistor/2012/rapporterl2/bolibar_jordi_12062.pdf [retri eved on 2014-06-19] Page 31, Section Sonification, Page 45 Combined Perception, Page 46, Video	1-10,20
X	us 2006/204045 AI (ANTONUCCI PAUL R A [US]) 14 September 2006 (2006-09-14) paragraph [0029] - paragraph [0032]	1-10,20
Y	Andrew Godbout ET AL: "CORRECTIVE SONIC FEEDBACK FOR SPEED SKATING: A CASE STUDY", The 16th Internati onal Conference on Audi tory Di spl ay (ICAD-2010), 9 June 2010 (2010-06-09), pages 1-8, XP055124334, Retri eved from the Internet: URL: http://pages.cpsc.ucal.gary.ca/~boyd/papers/i cadl0-godbout-boyd.pdf [retri eved on 2014-06-19] Secti on 3.3, Secti on 4	1-10,20
Y	JEFFREY E BOYD ET AL: "In Sit u Moti on Capture of Speed Skati ng: Escapi ng the Treadmi 11", COMPUTER AND ROBOT VISION (CRV), 2012 NINTH CONFERENCE ON, I EEE, 28 May 2012 (2012-05-28), pages 460-467, XP032456268, D0I: 10. 1109/CRV.2012 .68 ISBN: 978-1-4673-1271-4 Secti on I, Secti on IV	1-10,20

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International application No
PCT/US2014/023313

Catogor:*	Citation of document with indication where appropriate of the relevant appropriate	Polovant to alaim Na
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	US 2013/029791 A1 (ROSE JESSICA [US] ET AL) 31 January 2013 (2013-01-31) paragraph [0049] - paragraph [0050]	1-10,20

International application No. PCT/US2014/023313

INTERNATIONAL SEARCH REPORT

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2. Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
 No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-10, 20
Remark on Protest The additional search fees were accompanied by the applicant's protest and, where applicable, the '—' payment of a protest fee.
The additional search fees were accompanied by the applicant's protest but the applicable protest '—' fee was not paid within the time limit specified in the invitation.
No protest accompanied the payment of additional search fees.

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

1. claims: 1-10, 20

Audi ble feedback to an athlete during performance of a physical activity, first feature, first audio feedback, second feature, second audio feedback (tempo feedback).

2. claims: 11-19

Determining and athletic attribute of an athlete from video, quality of the movement, feedback on performance (not 1imited to audio).

Information on patent family members

International application No
PCT/US2014/023313

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					US		Al	11-09-2014	