

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 November 2022 (17.11.2022)



(10) International Publication Number
WO 2022/240747 A1

(51) International Patent Classification:

A61B 5/0205 (2006.01) A61B 5/05 (2021.01)
A61B 5/0245 (2006.01) A61B 5/08 (2006.01)

(21) International Application Number:

PCT/US2022/028332

(22) International Filing Date:

09 May 2022 (09.05.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/186,318 10 May 2021 (10.05.2021) US

(71) Applicant: VANDERBILT UNIVERSITY [US/US];
Center for Technology Transfer and Commercialization,

305 Kirkland Hall, 2201 West End Avenue, Nashville, Tennessee 37240 (US).

(72) Inventors; and

(71) Applicants: HOCKING, Kyle M. [US/US]; 305 Kirkland Hall, 2201 West End Avenue, Nashville, Tennessee 37240 (US). BROPHY, Colleen M. [US/US]; 305 Kirkland Hall, 2201 West End Avenue, Nashville, Tennessee 37240 (US). ALVIS, Bret D. [US/US]; 305 Kirkland Hall, 2201 West End Avenue, Nashville, Tennessee 37240 (US).

(74) Agent: KAMLER, Chad A.; McDonnell Boehnen Hulbert & Berghoff LLP, 300 South Wacker Drive, Chicago, Illinois 60606 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,

(54) Title: SYSTEM AND METHOD FOR QUANTIFICATION OF RESPIRATION

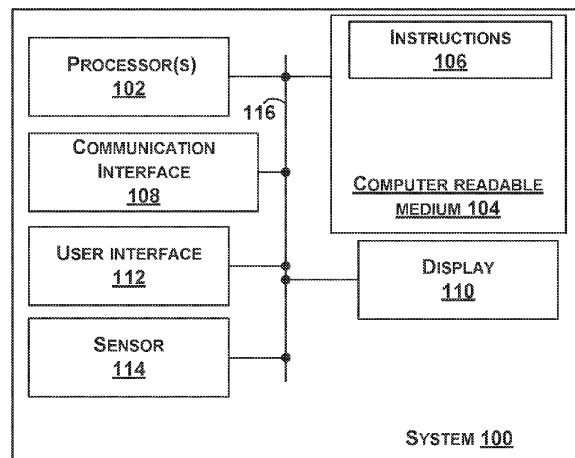


FIG. 1

(57) Abstract: A system includes one or more processors, a user interface, a sensor, and a computer readable medium storing instructions that, when executed by the one or more processors, cause the system to perform functions. The functions include generating, via the sensor, a signal representing vibrations originating from a blood vessel of a patient and generating an intensity spectrum of the signal that indicates intensities of the vibrations with respect to oscillation frequencies of the vibrations. The functions also include identifying a first peak of the intensity spectrum that corresponds to a respiratory frequency of the patient and a second peak of the intensity spectrum that corresponds to a heart rate of the patient. The functions also include performing a comparison of a first intensity of the first peak with a second intensity of the second peak and generating, via the user interface, output indicative of the comparison.

[Continued on next page]



WO 2022/240747 A1

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, 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).

Published:

— with international search report (Art. 21(3))