



(51) International Patent Classification:

A61B 5/00 (2006.01) A61B 5/318 (2021.01)
A61B 5/02 (2006.01) G16H 40/63 (2018.01)
A61B 5/021 (2006.01)

(21) International Application Number:

PCT/IB2023/052269

(22) International Filing Date:

09 March 2023 (09.03.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/318,216 09 March 2022 (09.03.2022) US

(71) Applicant: **FOUNDRY INNOVATION & RESEARCH**

1, LTD. [IE/IE]; Arthur Cox Building, Earlsfort Centre,
Earlsfort Terrace, Dublin, 2 (IE).

(72) Inventors: **WETTERLING, Friedrich**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **SWEENEY, Fiachra M.**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **CORLEY-CARMODY, Daire**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **SHERIDAN, Stephen**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **TUCKER, James**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **GAUL, Robert**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **BRITTON, John R.**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **HERNANDO, Teresa Maria Buxo**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE). **O'ROURKE, Damien**; Arthur Cox Building, Earlsfort Centre, Earlsfort Terrace, Dublin, 2 (IE).

(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,

(54) Title: HEART FAILURE DIAGNOSTIC TOOLS AND METHODS USING SIGNAL TRACE ANALYSIS

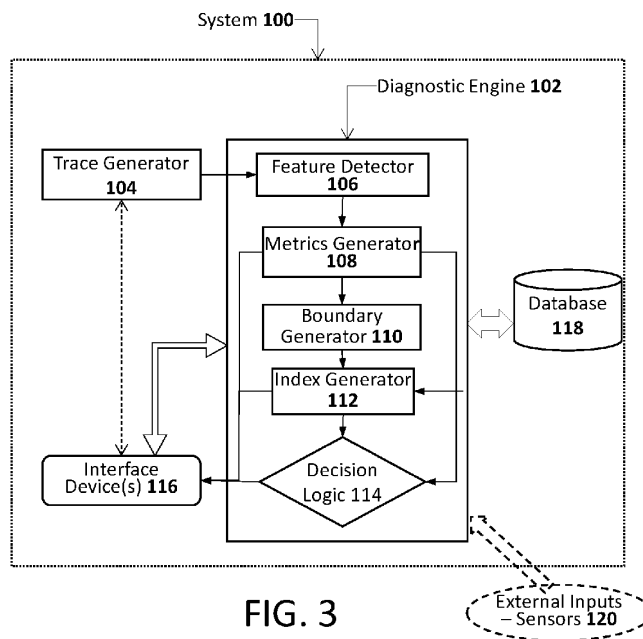


FIG. 3

(57) Abstract: Systems and methods disclosed offer improved heart failure patient outcomes by automatically extracting features from vessel area traces and generating cardiac health indicative parameters based on extracted features to provide a normalized congestion index to assess patient status. Examples include diagnostic engine (102) receiving area traces from trace generator (104) and communicating patient status information through user interfaces (116). The diagnostic engine may comprise trace feature detector (106), metrics generator (108), boundary generator (110), index generator (112) and decision logic (114). Disclosed systems may be executed using one or more processing devices or in a networked, distributed processing system.

CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, 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, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE