



(51) International Patent Classification:

B25J 9/16 (2006.01) *G06T 7/55* (2017.01)
B25J 19/02 (2006.01) *G01B 11/02* (2006.01)

(21) International Application Number:

PCT/US2022/021141

(22) International Filing Date:

21 March 2022 (21.03.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/166,747 26 March 2021 (26.03.2021) US

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(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, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, 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,

(54) Title: PERCEPTION MODULE FOR A MOBILE MANIPULATOR ROBOT

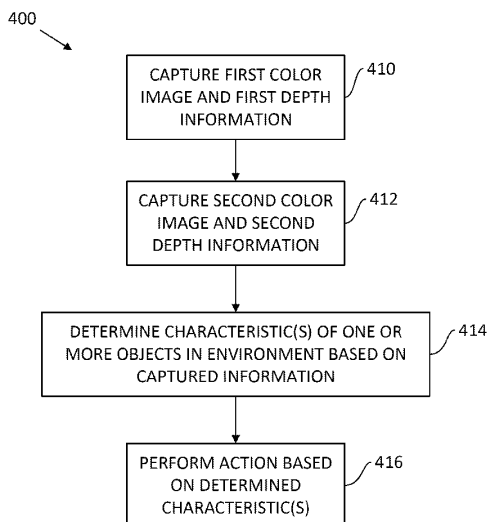


FIG. 4

(57) Abstract: An imaging apparatus includes a structural support rigidly coupled to a surface of a mobile robot and a plurality of perception modules, each of which is arranged on the structural support, has a different field of view, and includes a two-dimensional (2D) camera configured to capture a color image of an environment, a depth sensor configured to capture depth information of one or more objects in the environment, and at least one light source configured to provide illumination to the environment. The imaging apparatus further includes control circuitry configured to control a timing of operation of the 2D camera, the depth sensor, and the at least one light source included in each of the plurality of perception modules, and at least one computer processor configured to process the color image and the depth information to identify at least one characteristic of one or more objects in the environment.

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))*