



(51) International Patent Classification:

G05B 19/418 (2006.01) G10L 15/183 (2013.01)  
G10L 15/22 (2006.01) G05B 19/4155 (2006.01)  
G10L 15/18 (2006.01) G06F 40/20 (2020.01)

(21) International Application Number:

PCT/US2022/037646

(22) International Filing Date:

19 July 2022 (19.07.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/223,911 20 July 2021 (20.07.2021) US  
17/868,698 19 July 2022 (19.07.2022) US

(71) Applicant: **LAVORRO, INC.** [US/US]; 3790 El Camino Real, Suite 540, Palo Alto, CA 94306 (US).

(72) Inventors: **BHATTACHERJEE, Arya, Priya**; 3790 El Camino Real, Suite 540, Palo Alto, CA 94306 (US). **WEBSTER, David, Harrison**; 3790 El Camino Real, Suite 540, Palo Alto, CA 94306 (US). **BRAUN, Scott, Michael**; 3790 El Camino Real, Suite 540, Palo Alto, CA 94306 (US).

(74) Agent: **JUREK, Keith**; Baker Botts L.L.P., 1001 Page Mill Road, Building One, Suite 200, Palo Alto, CA 94304 (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, 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,

(54) Title: IMPROVED MEAN TIME BETWEEN FAILURE OF SEMICONDUCTOR-FABRICATION EQUIPMENT USING DATA ANALYTICS WITH NATURAL-LANGUAGE PROCESSING

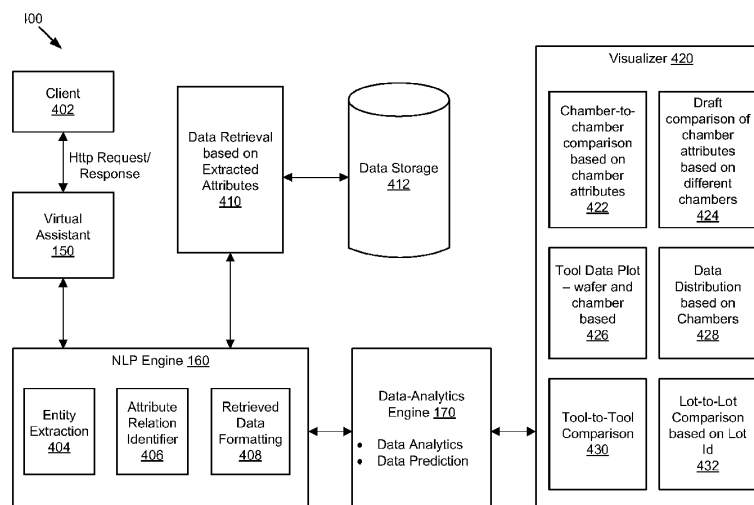


FIG. 4

(57) Abstract: In one embodiment, a system includes a wafer handling system, processing components, a controller, a virtual assistant, a natural language processing (NLP) engine, and a data- analytics engine. The wafer handling system is configured to hold one or more wafers for processing. The processing components is configured to physically treat the one or more wafers. The controller is configured to operate the processing components. The virtual assistant, in communication with the NLP engine, is configured to receive a user query from a user, understand an intent or context of the user query, and provide a context- specific response to the user query. The data- analytics engine is configured to generate and provide analytical data relating to the user query based on data collected from a plurality of data sources via one or more communication protocols.

[Continued on next page]

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))*