PROSPECTS 5.0

PROSPECTS 5.0 Industry 5.0 Wiki December 2024 Patent Analysis

Date : 01.12.2024

Task : Task 5.2

Partner : INTRACT

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Funded by the European Union

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PATENT SEARCH AND ANALYSIS

In the context of the **PROSPECTS 5.0** project, patent analysis (ANNEX I) serves as a critical tool to identify, assess, and monitor technological advancements and intellectual property trends relevant to the project's objectives. Patent analysis involves the systematic examination of patent documents to uncover information about state-of-the-art technologies, key players in the market, and potential opportunities or risks related to intellectual property. This analysis is particularly significant for ensuring innovation remains aligned with market needs and for avoiding potential conflicts / infringements with existing patents.

For **PROSPECTS 5.0**, patent analysis was conducted to provide strategic insights into the competitive landscape and to support the project's goal of fostering innovation in a rapidly evolving field. Moreover, the process will be repeated regularly throughout the project lifecycle. Regular updates are essential to capture emerging trends, monitor new patent filings, and adapt to shifts in the technological and market environment, ensuring the project remains at the forefront of innovation.

The updated patent analysis will be published in the PROSPECTS 5.0 Industry 5.0 Wiki [1]to share it with stakeholders.

To streamline the patent analysis, relevant keywords and CPC (Cooperative Patent Classification) codes were identified to focus the research effectively. Although there is no specific CPC code dedicated exclusively to Industry 5.0, a combination of multiple codes was utilized to create a tailored query text capable of accessing patents related to Industry 5.0. This approach ensured a comprehensive and accurate exploration of relevant patents.

The CPC codes employed in the analysis are listed below:

Symbol	Classification and description
G	PHYSICS
	INSTRUMENTS
G05	CONTROLLING; REGULATING
G05B	**CONTROL OR REGULATING SYSTEMS IN GENERAL; FUNCTIONAL ELEMENTS OF SUCH SYSTEMS; MONITORING OR TESTING ARRANGEMENTS FOR SUCH SYSTEMS OR ELEMENTS** (systems for controlling or regulating non-electric variables G05D; systems for regulating electric or magnetic variables G05F; control devices or systems insofar as characterised by mechanical features only G05G)
G05B 19/00	Programme-control systems

Figure 1 G05B19

[1] https://wiki.prospects5-0.eu/

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Symbol	Classification and description
G	PHYSICS
	INSTRUMENTS
G06	COMPUTING; CALCULATING OR COUNTING
G06Q	INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES, NOT OTHERWISE PROVIDED FOR
G06Q 10/00	Administration; Management
G06Q 10/08	•Logistics, e.g. warehousing, loading or distribution; Inventory or stock management

Figure 2 G06Q10/08

Symbol	Classification and description
G	PHYSICS
	INSTRUMENTS
G06	COMPUTING; CALCULATING OR COUNTING
G06Q	INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES, NOT OTHERWISE PROVIDED FOR
G06Q 10/00	Administration; Management
G06Q 10/04	•Forecasting or optimisation specially adapted for administrative or management purposes, e.g. linear programming or "cutting stock problem" (market predictions or forecasting for commercial activities G06Q 30/0202)
G06Q 10/043	••{Optimisation of two dimensional placement, e.g. cutting of clothes or wood}
G06Q 10/047	••Optimisation of routes or paths, e.g. travelling salesman problem

Figure 3 G06Q10/04

Symbol	Classification and description
G	PHYSICS
	INSTRUMENTS
G06	COMPUTING; CALCULATING OR COUNTING
G06Q	INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES, NOT OTHERWISE PROVIDED FOR
G06Q 10/00	Administration; Management
G06Q 10/06	•Resources, workflows, human or project management; Enterprise or organisation planning; Enterprise or organisation modelling

Figure 4 G06Q10/06

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Symbol	Classification and description
B	PERFORMING OPERATIONS; TRANSPORTING
	SHAPING
B25	HAND TOOLS; PORTABLE POWER-DRIVEN TOOLS; MANIPULATORS
B25J	MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES ({manipulators specially adapted for use in surgery A61B 34/70; manipulators used in cleaning hollow articles B08B 9/04} ; manipulators associated with rolling mills B21B 39/20; manipulators associated with forging machines B21J 13/10; {manipulators associated with picking-up and placing mechanisms B23P 19/007} ; means for holding wheels or parts thereof B60B 30/00; {vehicles with ground-engaging propulsion means, e.g. walking members B62D 57/02, B62D 57/032; devices for picking-up and depositing articles or materials between conveyors B65G 47/90, B65G 47/91; manipulators with gripping or holding means for transferring packages B65H 67/065}; cranes B66C; {manipulators used in the protection or supervision of pipe-line installations F17D 5/00; walking equipment adapted for nuclear steam-generators F22B 37/006}; manipulators specially adapted for, or associated with, nuclear reactors G21C; {apparatus used for handling wafers during manufacture or treatment of semiconductor H01L 21/68})
B25J 9/00	Programme-controlled manipulators

Figure 5 B25J9/00

Symbol	Classification and description
G	PHYSICS
	INSTRUMENTS
G06	COMPUTING; CALCULATING OR COUNTING
G06Q	INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL OR SUPERVISORY PURPOSES, NOT OTHERWISE PROVIDED FOR
G06Q 50/00	Information and communication technology [ICT] specially adapted for implementation of business processes of specific business sectors, e.g. utilities or tourism (healthcare informatics G16H)
G06Q 50/04	• Manufacturing

Figure 6 G06Q50/04

Symbol	Classification and description
Y	GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS
Y02	TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE
Y02P	CLIMATE CHANGE MITIGATION TECHNOLOGIES IN THE PRODUCTION OR PROCESSING OF GOODS
Y02P 90/00	Enabling technologies with a potential contribution to greenhouse gas [GHG] emissions mitigation
Y02P 90/02	• Total factory control, e.g. smart factories, flexible manufacturing systems [FMS] or integrated manufacturing systems [IMS]

Figure 7 Y02P90/02

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Symbol	Classification and description
Y	GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS
Y02	TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE
Y02P	CLIMATE CHANGE MITIGATION TECHNOLOGIES IN THE PRODUCTION OR PROCESSING OF GOODS
Y02P 90/00	Enabling technologies with a potential contribution to greenhouse gas [GHG] emissions mitigation
Y02P 90/30	• Computing systems specially adapted for manufacturing

Figure 8 Y02P90/30

You can access the final research results through the following link.

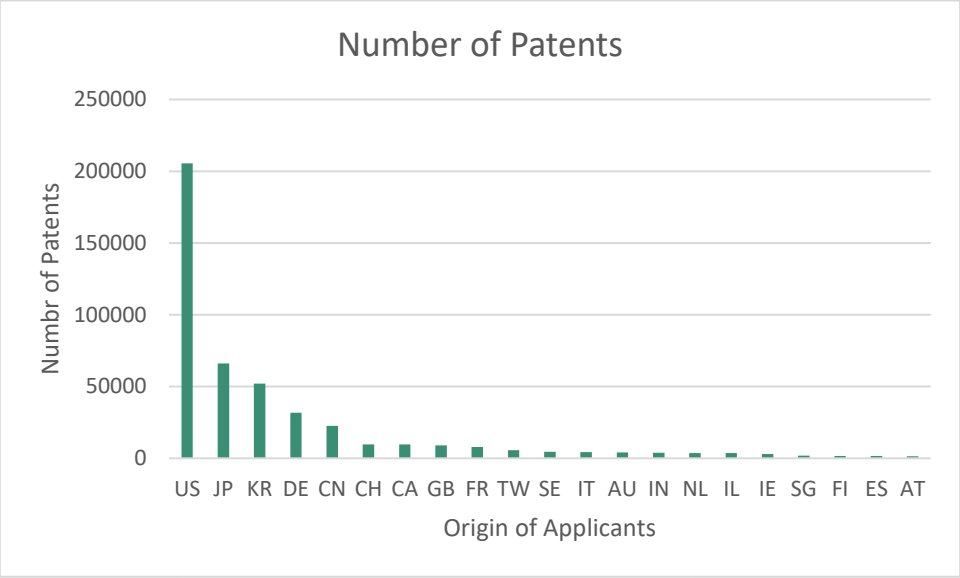

Figure 9 Origin of the Applicants by Country

The chart illustrates the distribution of patent filings by the origin of applicants, highlighting that while the data reflects the number of patent applications, not all of these patents have been granted. Nevertheless, the chart remains significant as it demonstrates the strong inclination in countries like the United States (US), Japan (JP), and South Korea (KR) to protect intellectual property rights in the field, which reflects a high level of innovation activity.

Even though not all filed patents are eventually granted, the substantial number of applications indicates a proactive approach to securing intellectual property. This trend is crucial as it signals the intention of these countries to lead in technological advancements and maintain a competitive edge in global markets.

For the European Union (EU), despite the relatively lower number of patent filings compared to leading countries, this data serves as a reminder of the need for more robust efforts in encouraging intellectual property protection. EU member states, including Germany (DE) and France (FR), must enhance their efforts to ensure that innovation is safeguarded effectively, which is vital for strengthening the region's position in emerging fields such as Industry 5.0. The chart, therefore, highlights the growing importance of intellectual property

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rights in fostering technological development and securing a competitive advantage on the global stage.

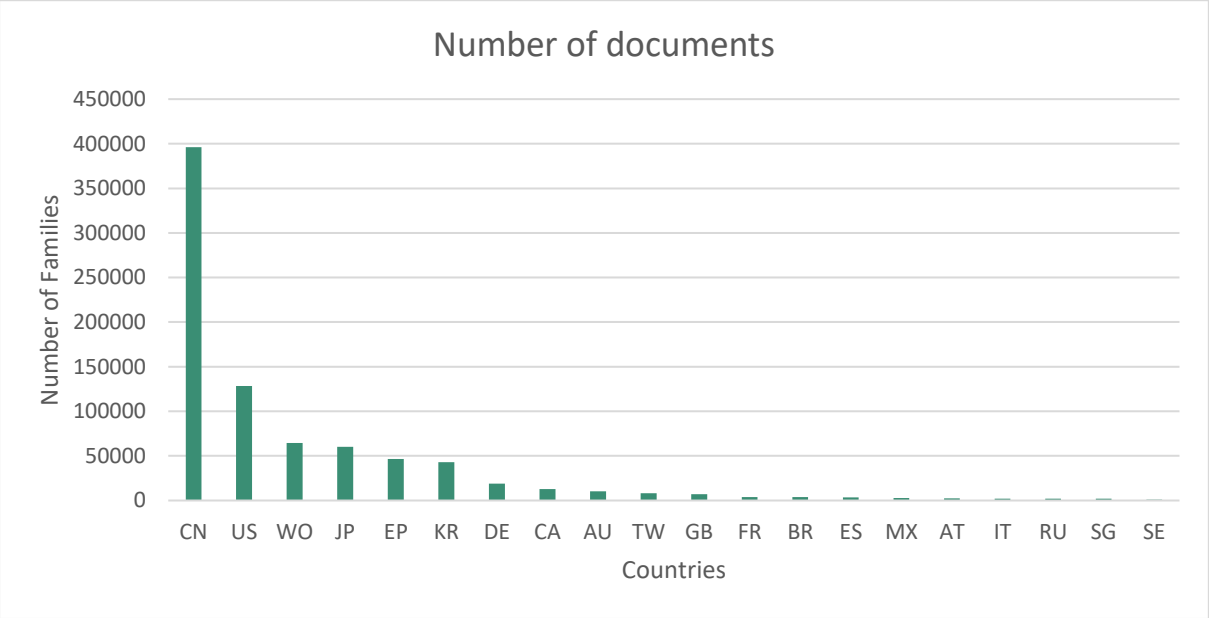

Figure 10 Number of Patent Families for Top Applicant Countries

The chart illustrates the number of patents filed in various countries, showing where applicants have chosen to seek protection for their intellectual property. This data highlights the countries where there is a strong tendency to protect patents, even though it does not confirm whether the patents have been granted yet. The high number of filings in countries like the United States (US), Japan (JP), and South Korea (KR) reflects a strong interest in securing intellectual property in these regions, which are key innovation hubs.

In these countries, the willingness to protect patents demonstrates a commitment to safeguarding technological advancements and innovations, indicating a proactive approach towards maintaining a competitive advantage in global markets. The trend of seeking protection in these countries suggests that companies and inventors see value in establishing their intellectual property rights within these jurisdictions.

For European Union (EU) countries, the relatively lower number of filings suggests that, while there is intellectual property protection, there may be room for growth in terms of innovation activities and patent filings. This underlines the importance for the EU to further encourage the protection of intellectual property to ensure that its innovations are legally safeguarded, which would improve the region's competitiveness in emerging technological fields like Industry 5.0. In summary, while the data does not reflect granted patents, it provides valuable insights into where inventors and companies prioritize securing their intellectual property, highlighting the growing trend of patent protection in these key countries.

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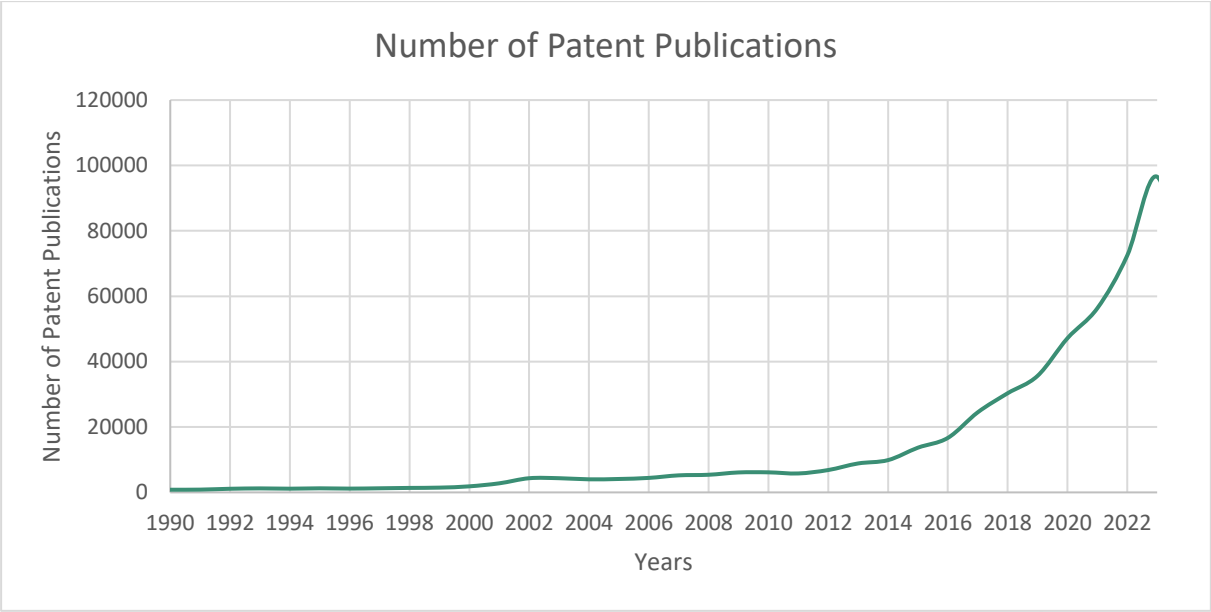

Figure 11 Number of Patent Publications for Each Year Between 1990 – 2023[2]

The chart illustrates the change in the number of patent documents over the years. Starting from 1990, there has been a steady increase in the number of patent filings. Notably, after 2010, the growth rate accelerated significantly, reflecting an intensification of technological advancements and innovation activities.

Around 2020, the number of patent documents peaked, indicating a period of heightened innovation. However, a decline is observed following this peak, which could be attributed to global events such as the pandemic or a temporary slowdown in patent filing activities.

Overall, the chart highlights the rapid acceleration of R&D and innovation in recent years. To maintain and further this momentum, continuous monitoring and strategic support are essential. Projects like **PROSPECTS 5.0** play a crucial role in analysing such trends and identifying new opportunities for growth.

[2] According to patent laws, patents are not published until 18 months after filing unless an early publication request is made. Therefore, the number of patents published in 2024 does not include all filed patents and has been excluded from the chart for this reason.

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ANNEX I

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Espacenet search result - 20241225_1302

152 302 results found for ((cpc = "G05B19/low" OR cpc = "G06Q10/08/low" OR cpc = "G06Q10/04/low" OR cpc = "G06Q10/06/low" OR cpc = "B25J9/00/low") AND (nftxt = "manufact*" OR nftxt = "produc*")) OR cpc = "G06Q50/04/low" OR (cpc = "Y02P90/02/low" OR cpc = "Y02P90/30/low")
Results 1 to 100 displayed
Query language: en / de / fr
Sort by: Publication date
Filters:

Languages (family): en

Countries (family): (US OR WO OR EP)

US 20240420156A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0420156 A1**

(43) **Pub. Date: Dec. 19, 2024**

WILLIAMS et al.

(54) **SMART LABELING MANAGEMENT**

(71) Applicant: **IQVIA Inc.**, Parsippany, NJ (US)

(72) Inventors: **Cham WILLIAMS**, Media, PA (US); **Deven MEHTA**, Belle Mead, NJ (US); **Julian BACKHOUSE**, Wirral (GB); **Gilberte HOUBART**, Cambridge, MA (US); **Guilherme COUTO**, Rio de Janeiro (BR)

(21) Appl. No.: **18/333,973**

(22) Filed: **Jun. 13, 2023**

Publication Classification

(51) **Int. Cl.**

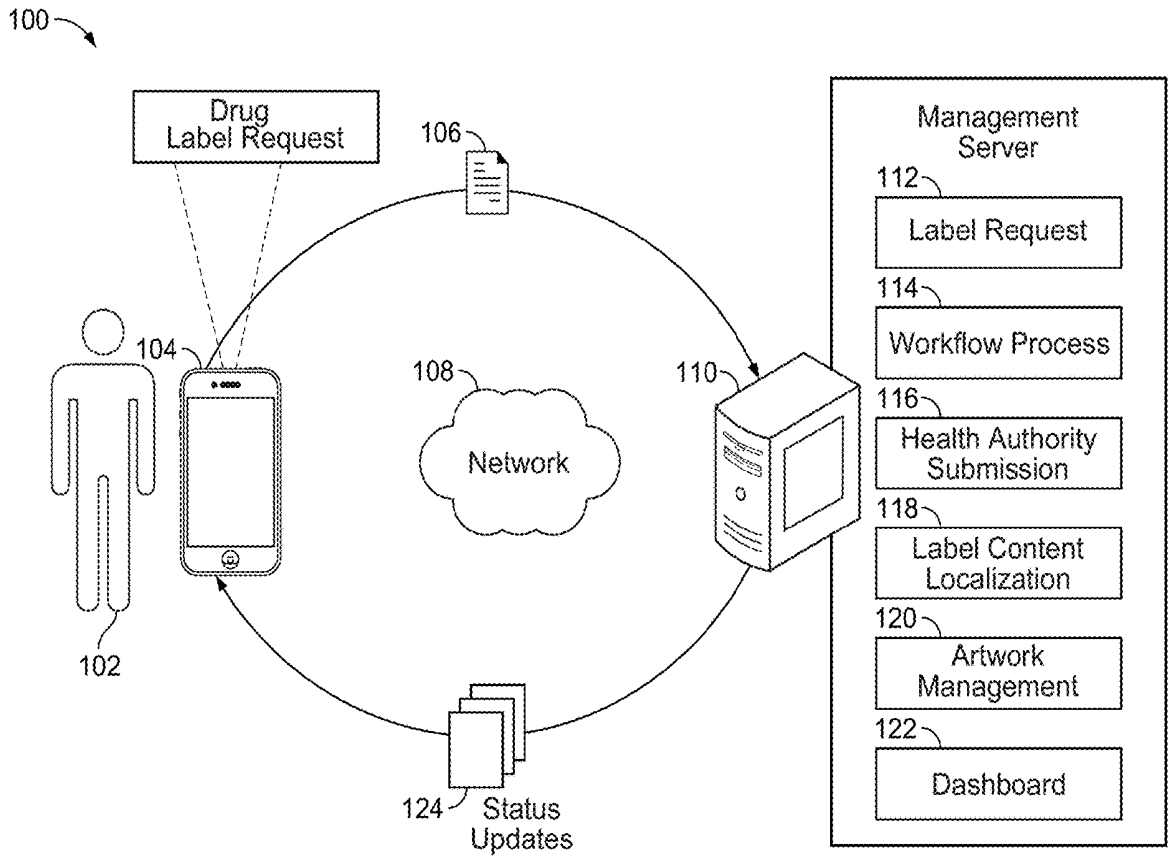
G06Q 30/018	(2006.01)
G06Q 10/0633	(2006.01)
G16H 40/20	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 30/018*** (2013.01); ***G06Q 10/0633*** (2013.01); ***G16H 40/20*** (2018.01)

(57) **ABSTRACT**

Methods, systems, and apparatus, including computer programs encoded on computer storage media, for managing a life cycle of a label. In some implementations, a request for generating a label for a product can be received. Workflows for generation of the label can be identified. The workflows for the generation of the label can be executed. In response to executing the workflows for the generation of the label, data indicative of the generation of the label can be submitted to a health authority. Data indicative of the approval of the label for the product can be received from the health authority. In response to receiving data from the health authority indicative of approval of the label for the product, a layout for the label can be generated for the product.



US 20240420064A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0420064 A1

Basanez (43) Pub. Date: Dec. 19, 2024

(54) **PRODUCTIVITY MANAGEMENT SYSTEM**

(71) Applicant: **Juan Jose Basanez**, Sunny Isles, FL (US)

(72) Inventor: **Juan Jose Basanez**, Sunny Isles, FL (US)

(21) Appl. No.: **18/336,983**

(22) Filed: **Jun. 17, 2023**

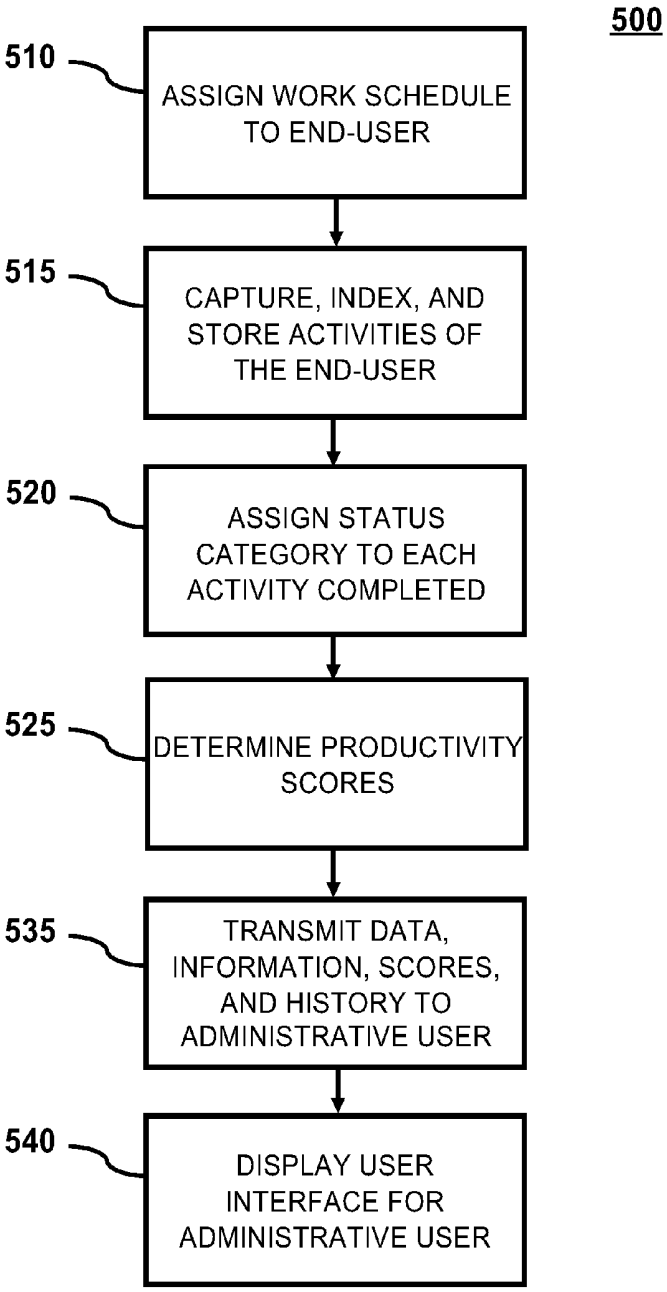
Publication Classification

(51) **Int. Cl.**
G06Q 10/0639 (2006.01)
G06Q 10/0631 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06398*** (2013.01); ***G06Q 10/063114*** (2013.01)

(57) **ABSTRACT**

A computer implemented method for obtaining one or more productivity scores and an activity summary for an end-user of an application program, and a computer program product having a non-transitory computer readable storage medium with program instructions embodied therewith are provided. The method and product are configured to capture, index, and store data and information for activities completed by the end-user during the work schedule; transmit the data and information to an administrator of the application program; and display an activity summary and productivity score for the end-user based on the data and information.



US 20240420078A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0420078 A1

Rahim et al. (43) Pub. Date: Dec. 19, 2024

(54) METHOD, SYSTEM, AND COMPUTER PROGRAM PRODUCT FOR ARTIFICIAL INTELLIGENCE-ASSISTED IMAGING AND INVENTORY MANAGEMENT

(71) Applicant: **Mobile Aspects, Inc.**, Pittsburgh, PA (US)

(72) Inventors: **Muhammad R. Rahim**, Monroeville, PA (US); **Timur P. Sriharto**, Monroeville, PA (US); **Suneil Mandava**, Pittsburgh, PA (US)

(21) Appl. No.: **18/740,057**

(22) Filed: **Jun. 11, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/508,079, filed on Jun. 14, 2023.

Publication Classification

(51) **Int. Cl.**

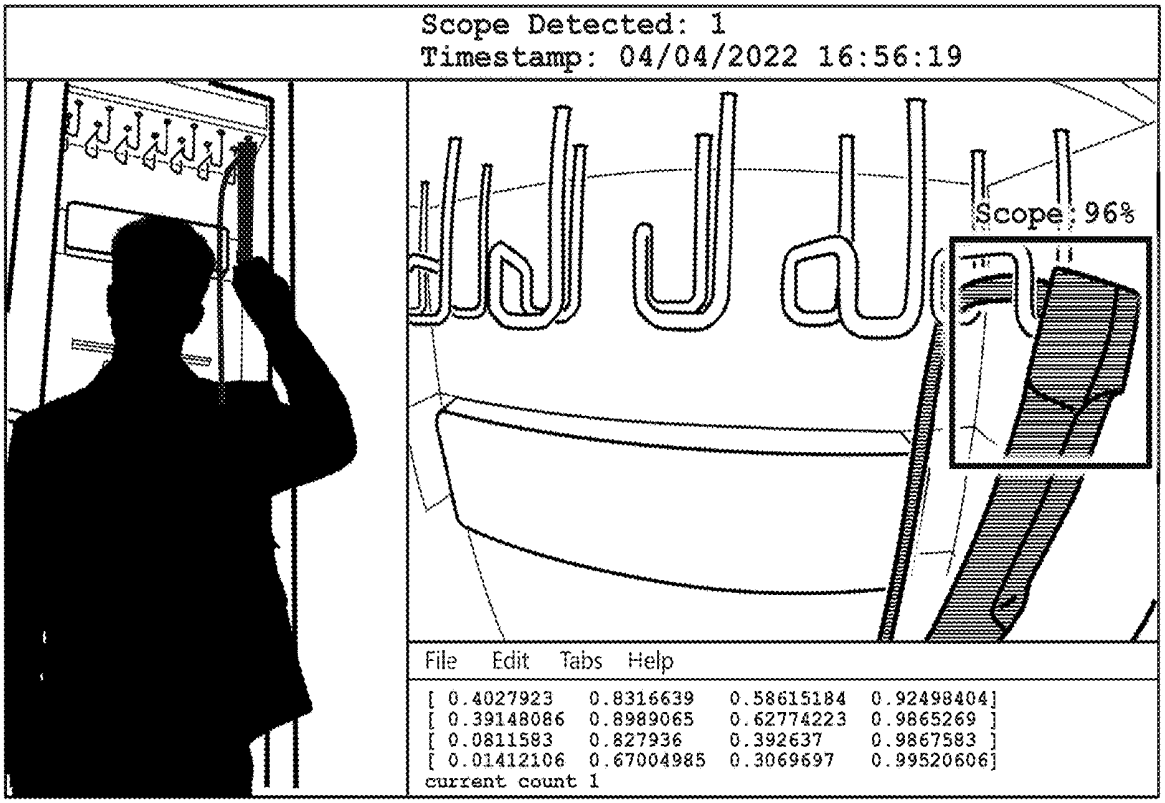
G06Q 10/087	(2006.01)
G06T 7/20	(2006.01)
G06V 10/764	(2006.01)
G06V 20/52	(2006.01)
G06V 40/10	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/087*** (2013.01); ***G06T 7/20*** (2013.01); ***G06V 10/764*** (2022.01); ***G06V 20/52*** (2022.01); ***G06V 40/10*** (2022.01); *G06T 2207/20081* (2013.01); *G06T 2207/30004* (2013.01); *G06T 2207/30232* (2013.01); *G06V 2201/034* (2022.01)

(57) **ABSTRACT**

Described are a method, system, and computer program product for artificial intelligence-assisted imaging and inventory management. The method includes receiving image data from an imaging device of an item in a room of a hospital. The method also includes determining a location of the item based on a position of the imaging device. The method further includes inputting a portion of the image data to an image classification machine-learning model trained on a set of images of items associated with an inventory of the hospital. The method further includes determining an item identifier based on an output of the image classification machine-learning model. The method further includes determining an item record based on the item identifier and updating the item record. Updating the item record includes updating a last known location in the item record based on the location of the item.



US 20240420061A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420061 A1**

Wuori (43) **Pub. Date: Dec. 19, 2024**

(54) **OVERALL PRODUCTIVITY IMPACT PREDICTION OVER A PREDETERMINED TIME PERIOD FOR EFFICIENTLY SCHEDULING ROAD CONSTRUCTION PROJECTS**

(71) Applicant: **Pavewise, Inc.**, Bismarck, ND (US)

(72) Inventor: **Bryce Wuori**, Bismarck, ND (US)

(21) Appl. No.: **18/479,740**

(22) Filed: **Oct. 2, 2023**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/446,467, filed on Aug. 8, 2023, which is a continuation-in-part of application No. 18/334,252, filed on Jun. 13, 2023.

Publication Classification

(51) **Int. Cl.**

G06Q 10/0637 (2006.01)

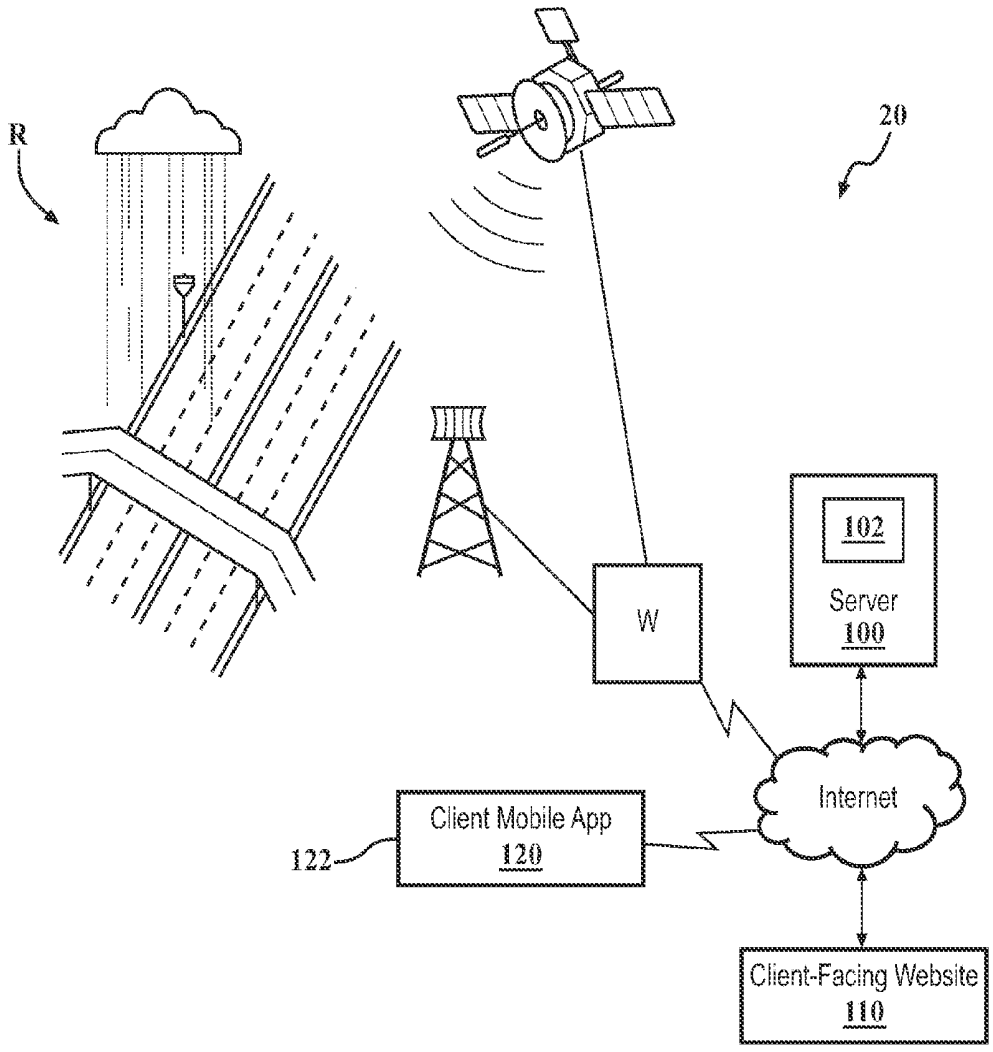
G06Q 10/04 (2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/06375*** (2013.01); ***G06Q 10/04*** (2013.01)

(57) **ABSTRACT**

A computer implemented method for determining an overall productivity impact prediction over a predetermined time period in response to forecasted weather events associated with a road construction project in response to forecasted weather events includes receiving, at one or more processors, a particular geographic location, wherein the particular geographic location is the subject of a road construction project; receiving, at the one or more processors, weather forecast data for the particular geographic location for each of a multiple of days over a predetermined time period; parsing, the received weather forecast data using the one or more processors to determine a predicted weather condition change on the road construction project for each of the multiple of days over the predetermined time period; determining, at the one or more processors, the impact of the predicted weather condition change on one or more productivity variables associated with the road construction project over the predetermined time period; and communicating the impact of the received weather forecast data over the predetermined time period to a user associated with the road construction project.



US 20240420054A1

(19) **United States**

(12) **Patent Application Publication**

Bagavathiappan et al.

(10) **Pub. No.: US 2024/0420054 A1**

(43) **Pub. Date: Dec. 19, 2024**

(54) **METHODS AND SYSTEMS FOR ASSESSING THE RISK OF A RELEASE TO A PRODUCTION ENVIRONMENT**

(71) Applicant: **DISH Network Technologies India Private Limited**, Karnataka (IN)

(72) Inventors: **Sivasubramanian Bagavathiappan**, Tamil Nadu (IN); **Kiran Chadalavada**, Chennai (IN); **Vinod Babu**, Tamil Nadu (IN)

(21) Appl. No.: **18/335,890**

(22) Filed: **Jun. 15, 2023**

Publication Classification

(51) **Int. Cl.**

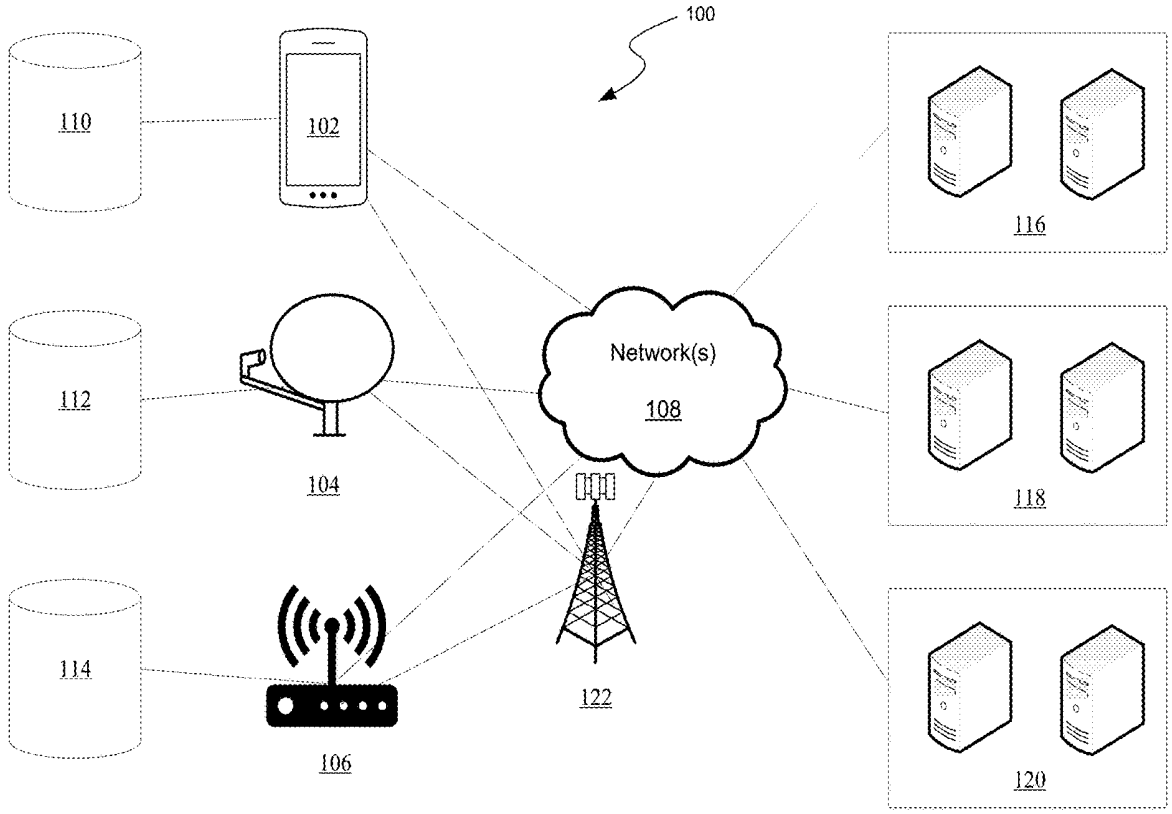
G06Q 10/0635	(2006.01)
G06F 40/242	(2006.01)
G06F 40/279	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/0635*** (2013.01); ***G06F 40/242*** (2020.01); ***G06F 40/279*** (2020.01)

(57) **ABSTRACT**

The present disclosure is directed to methods and systems for assessing the risk of a release to a production environment. The release assessment system can determine the risk of a release of a feature, such as a deployable software package, to an environment based on the characteristics of the release. The release assessment system compares the words in the software code of the release to stored historical keywords to identify any patterns or similarities between the current release and historical issues/errors/incidents. Based on the identified similarity to historical releases, the system determines a risk score for releasing the feature to the production environment.



US 20240420199A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420199 A1**

Sawaya (43) **Pub. Date: Dec. 19, 2024**

(54) **COLOR DESIGN PROCESS AND SYSTEM**

(71) Applicant: **Lori A. Sawaya**, Phoenix, AZ (US)

(72) Inventor: **Lori A. Sawaya**, Phoenix, AZ (US)

(21) Appl. No.: **18/334,230**

(22) Filed: **Jun. 13, 2023**

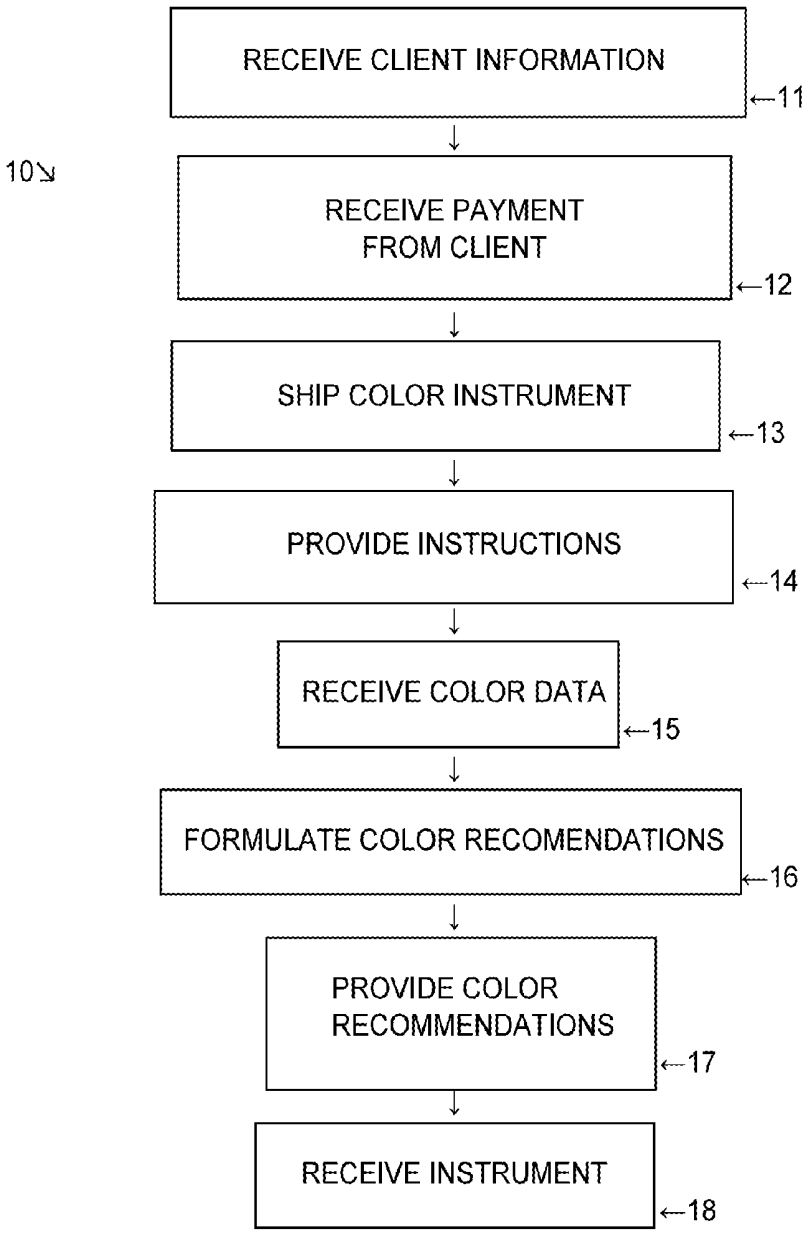
Publication Classification

(51) **Int. Cl.**
G06Q 30/0601 (2006.01)
G06Q 10/0837 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 30/0621*** (2013.01); ***G06Q 10/0837*** (2013.01); ***G06Q 30/0631*** (2013.01)

(57) **ABSTRACT**

Processes and systems for recommending to clients colors and color schemes for design purposes based on measured existing surface colors without a color strategist traveling to the worksite. A design process includes: receiving from a client information and payment for color consulting services, shipping a portable color-measuring instrument to the client; providing instructions to the client for operating the color-measuring instrument, receiving measured color data that was obtained by the client using the color-measuring instrument on multiple surfaces, formulating color recommendations based on the measured color data, and providing the color recommendations to the client. A design system for selecting color includes apparatuses that: gather and provide information, receive payment, ship the color-measuring instrument, and formulate the colors or color scheme.



US 20240420052A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0420052 A1**

(43) **Pub. Date: Dec. 19, 2024**

Mickey

(54) **SYSTEM AND METHOD FOR RESOURCE ALLOCATION CONTROL WITH DISPLAY**

(71) Applicant: **Alan S. Mickey**, Coventry, CT (US)

(72) Inventor: **Alan S. Mickey**, Coventry, CT (US)

(21) Appl. No.: **18/333,980**

(22) Filed: **Jun. 13, 2023**

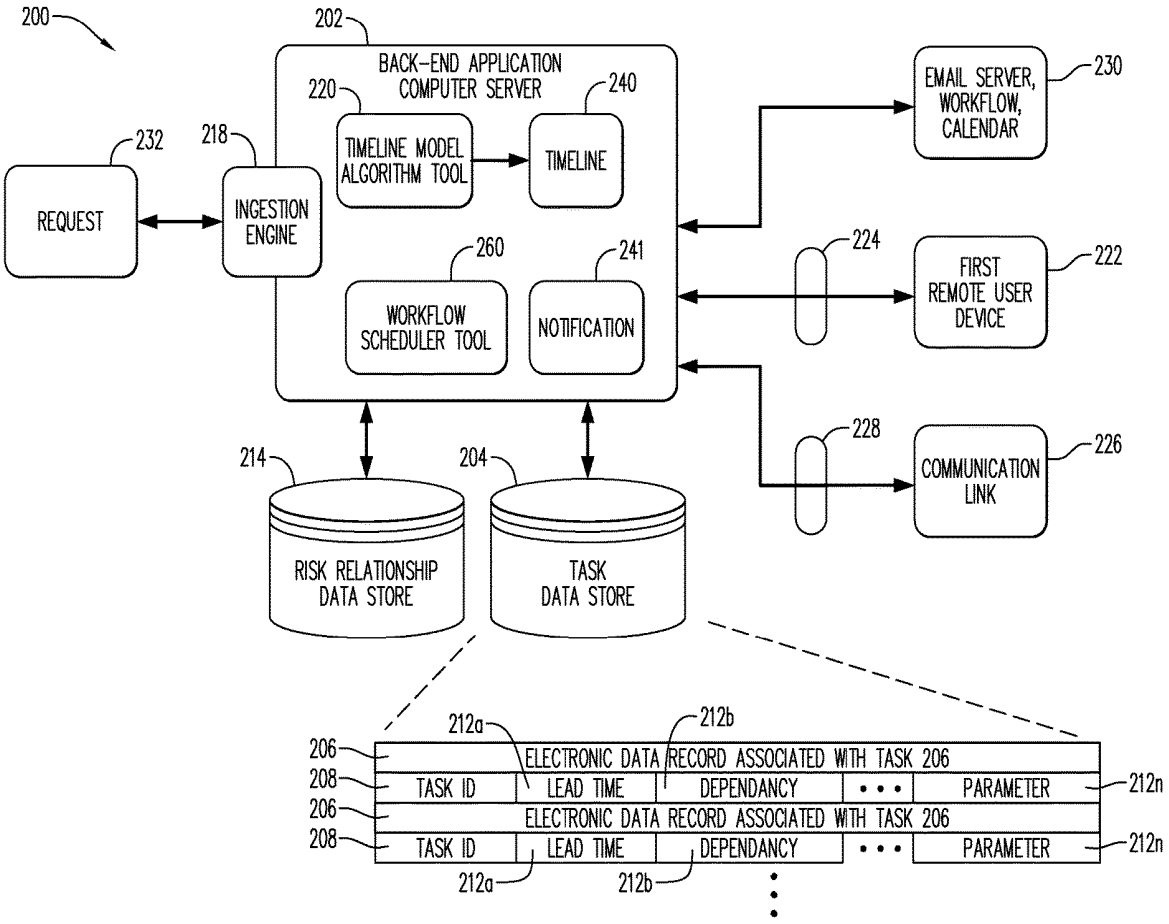
Publication Classification

(51) **Int. Cl.**
G06Q 10/0631 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06316*** (2013.01); *G06F 3/0482* (2013.01)

(57) **ABSTRACT**

According to some embodiments, systems and methods are provided including instructions to: receive a workflow; retrieve a plurality of tasks associated with the received workflow; generate a timeline for execution of each task including for at least one task a lead time and a dependent task; receive a user assignment for each task; and transmit the timeline and the user assignment to a workflow scheduler and the assigned user. A communication port is coupled to the back-end application computer server to facilitate an exchange of data with a remote device to support interactive user interface displays that provide information about the timeline. Numerous other aspects are provided.



US 20240420065A1

(19) **United States**

(12) **Patent Application Publication**

Murphy et al.

(10) **Pub. No.: US 2024/0420065 A1**

(43) **Pub. Date: Dec. 19, 2024**

(54) **DETERMINING INFRASTRUCTURE LOCATIONS USING GEOGRAPHIC TILING**

(71) Applicant: **Othersphere Systems Inc.**, Vancouver (CA)

(72) Inventors: **Robert Jonathan Murphy**, Victoria (CA); **William Christopher Sonnex**, Victoria (CA)

(21) Appl. No.: **18/658,186**

(22) Filed: **May 8, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/521,811, filed on Jun. 19, 2023.

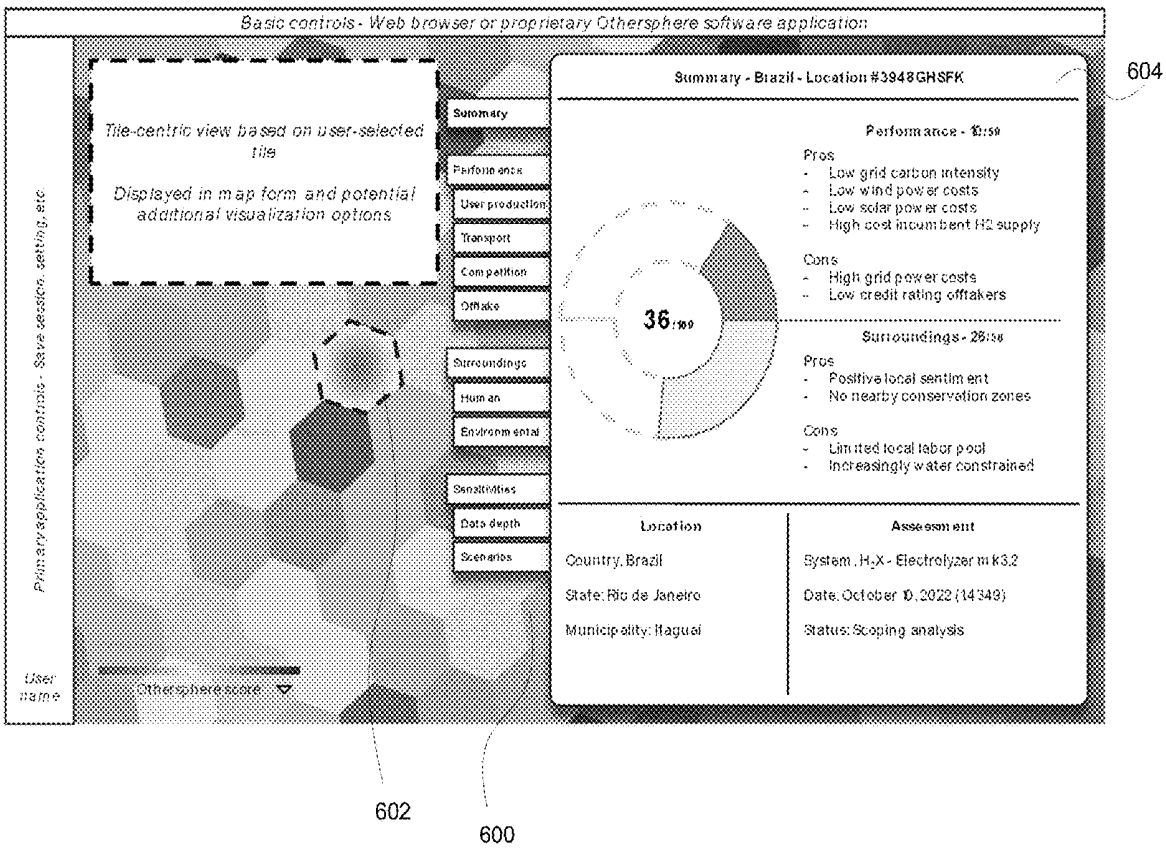
Publication Classification

(51) **Int. Cl.**
G06Q 10/067 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/067*** (2013.01)

(57) **ABSTRACT**

A system for determining infrastructure locations using geographic tiling comprises an interface and a processor. The interface is configured to receive a user request. The processor is configured to determine a set of source geographic tiles based at least in part on the user request, wherein one or more source characteristics are associated with a source geographic tile of the set of source geographic tiles; determine a list of consumption geographic tiles, wherein one or more consumption parameters are associated with a consumption geographic tile of the list of consumption geographic tiles; generate a user display based at least in part on the one or more source characteristics and on the one or more consumption parameters; and provide the user display to a user associated with the user request.



US 20240419153A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0419153 A1**

(43) **Pub. Date: Dec. 19, 2024**

Shrock et al.

(54) **SYSTEM FOR MONITORING AND CONTROL OF GRAIN HANDLING SYSTEMS**

(71) Applicant: **Sukup Manufacturing Co.**, Sheffield, IA (US)

(72) Inventors: **Daniel Wayne Shrock**, Raymondville, MO (US); **Matthew Koch**, Clear Lake, IA (US)

(21) Appl. No.: **18/732,790**

(22) Filed: **Jun. 4, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/507,840, filed on Jun. 13, 2023, provisional application No. 63/607,859, filed on Dec. 8, 2023.

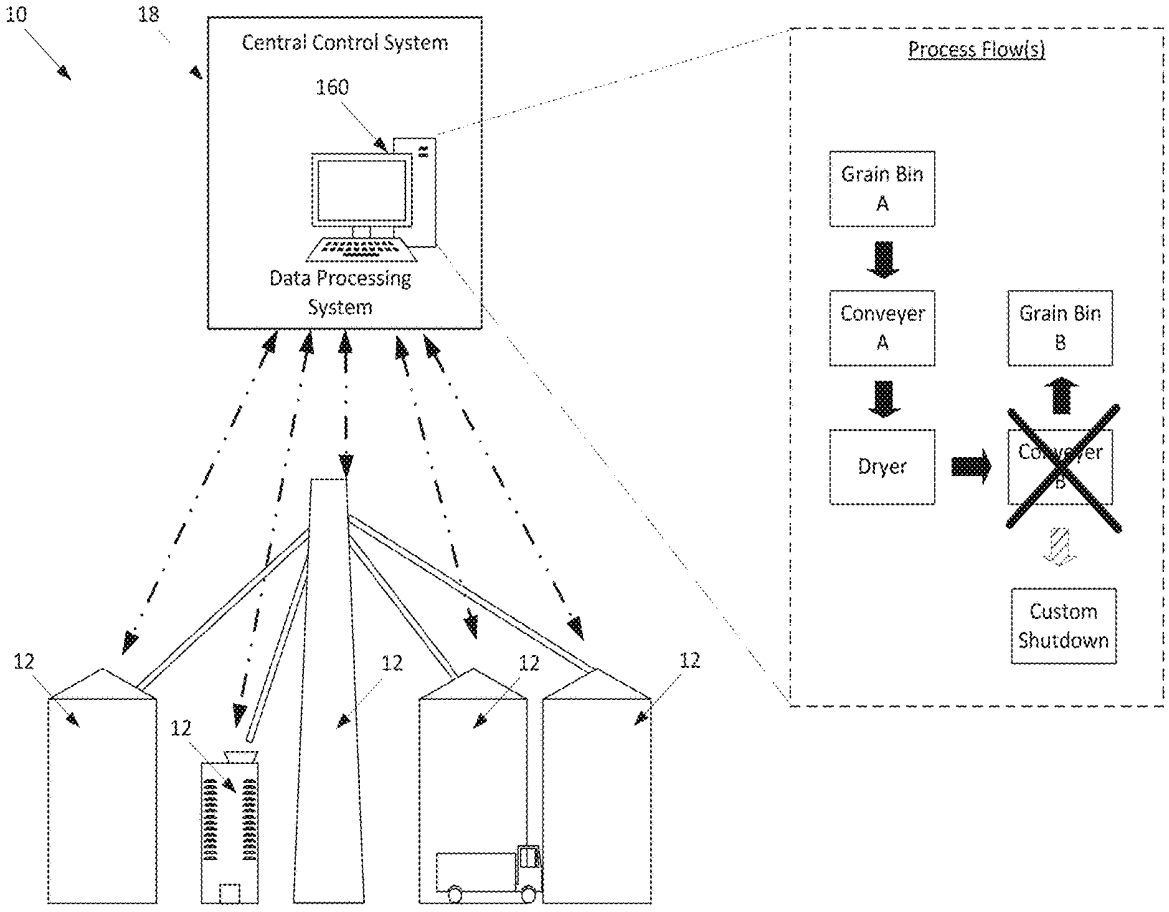
Publication Classification

(51) **Int. Cl.**
G05B 19/418 (2006.01)

(52) **U.S. Cl.**
CPC ... ***G05B 19/4184*** (2013.01); ***G05B 19/41865*** (2013.01); *G05B 2219/31449* (2013.01)

(57) **ABSTRACT**

A system is presented for monitoring grain handling systems at a grain handling site. The system includes a central control system and one or more intermediate control devices communicatively connected to the grain handling systems. The central control system is configured to provide a first user interface configured to facilitate creation of a process flow and programming of the intermediate control devices to operate in accordance with the process flow. In response to detecting an error in the process flow during operation, the central control system is configured to prompt the plurality of intermediate control devices to cause the set of the grain handling systems to perform a first set of actions indicated by the process flow if the error occurs before the grain handling systems and perform a second set of actions indicated by the process flow if the error occurs after the grain handling systems.



US 20240420059A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420059 A1**

Wuori (43) **Pub. Date: Dec. 19, 2024**

(54) **PROACTIVE RECOMMENDATION METHOD FOR EFFICIENTLY PERFORMING ROAD CONSTRUCTION PROJECTS IN RESPONSE TO FORECASTED WEATHER EVENTS**

(71) Applicant: **Pavewise, Inc.**, Bismarck, ND (US)

(72) Inventor: **Bryce Wuori**, Bismarck, ND (US)

(21) Appl. No.: **18/334,252**

(22) Filed: **Jun. 13, 2023**

Publication Classification

(51) **Int. Cl.**

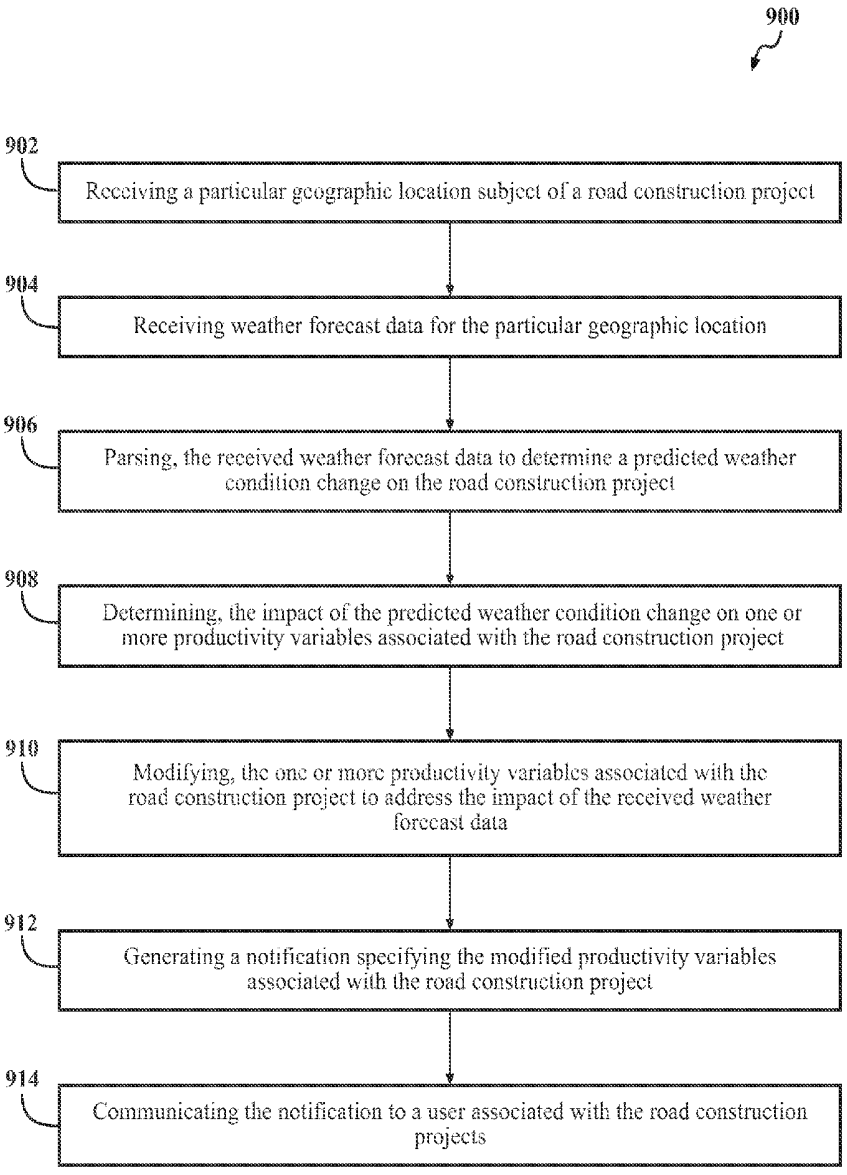
G06Q 10/0637	(2006.01)
G01W 1/10	(2006.01)
G06Q 50/08	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/06375*** (2013.01); ***G01W 1/10*** (2013.01); ***G06Q 50/08*** (2013.01)

(57) **ABSTRACT**

A computer implemented method, implemented on a computing device for modifying one or more productivity variables associated with a road construction project in response to forecasted weather events includes receiving, a particular geographic location subject of a road construction project; receiving weather forecast data for the particular geographic location; parsing the received weather forecast data to determine a predicted weather condition change; determining the impact of the predicted weather condition change on one or more productivity variables associated with the road construction project; modifying the one or more productivity variables associated with the road construction project to address the impact of the received weather forecast data; generating one or more notifications specifying the one or more modified productivity variables associated with the road construction project and communicating the one or more notifications.



US 20240420060A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0420060 A1

Wuori (43) Pub. Date: Dec. 19, 2024

(54) **PROACTIVE RECOMMENDATION METHOD FOR EFFICIENTLY PERFORMING ROAD CONSTRUCTION PROJECTS IN RESPONSE TO EMPLOYEE CONDITION**

(71) Applicant: **Pavewise, Inc.**, Bismarck, ND (US)

(72) Inventor: **Bryce Wuori**, Bismarck, ND (US)

(21) Appl. No.: **18/446,467**

(22) Filed: **Aug. 8, 2023**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/334,252, filed on Jun. 13, 2023.

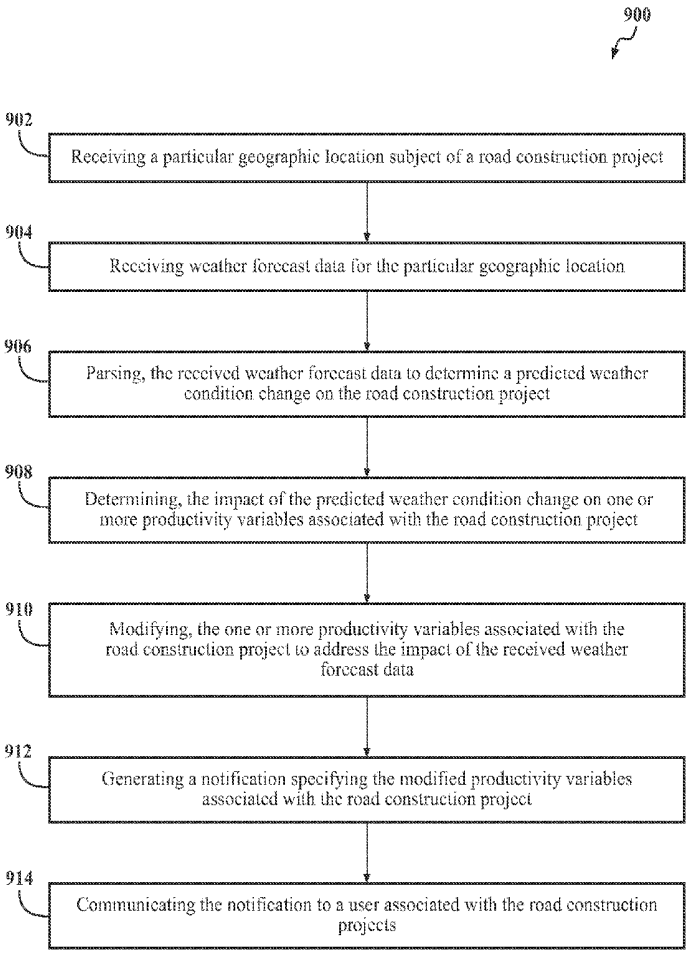
Publication Classification

(51) **Int. Cl.**
G06Q 10/0637 (2006.01)
G06Q 50/08 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06375*** (2013.01); ***G06Q 50/08*** (2013.01)

(57) **ABSTRACT**

A computer implemented method for modifying one or more productivity variables associated with a road construction project in response to forecasted weather events, includes receiving, at one or more processors, a particular geographic location, wherein the particular geographic location is the subject of a road construction project; receiving, at the one or more processors, weather forecast data for the particular geographic location; parsing, the received weather forecast data using the one or more processors to determine a predicted weather condition change on the road construction project; determining, at the one or more processors, the impact of the predicted weather condition change on one or more productivity variables associated with the road construction project; receiving, at the one or more processors, employee condition data for the road construction project; parsing, the received employee condition data using the one or more processors to determine a predicted impact on the road construction project; determining, at the one or more processors, the impact of the employee condition data on one or more productivity variables associated with the road construction project; modifying, at the one or more processors, the one or more productivity variables associated with the road construction project to address the impact of the received weather forecast data and the impact of the employee condition data; generating, using the one or more processors, one or more notifications specifying the one or more modified productivity variables associated with the road construction project; and communicating the one or more notifications to a user associated with the road construction projects.



US 20240420046A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420046 A1**

Wuori (43) **Pub. Date: Dec. 19, 2024**

(54) **HYPERLOCAL WEATHER STATION AND METHODS FOR EFFICIENTLY SCHEDULING ROAD CONSTRUCTION PROJECTS**

(71) Applicant: **Pavewise, Inc.**, Bismarck, ND (US)

(72) Inventor: **Bryce Wuori**, Bismarck, ND (US)

(21) Appl. No.: **18/639,438**

(22) Filed: **Apr. 18, 2024**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/479,740, filed on Oct. 2, 2023, which is a continuation-in-part of application No. 18/446,467, filed on Aug. 8, 2023, which is a continuation-in-part of application No. 18/334,252, filed on Jun. 13, 2023.

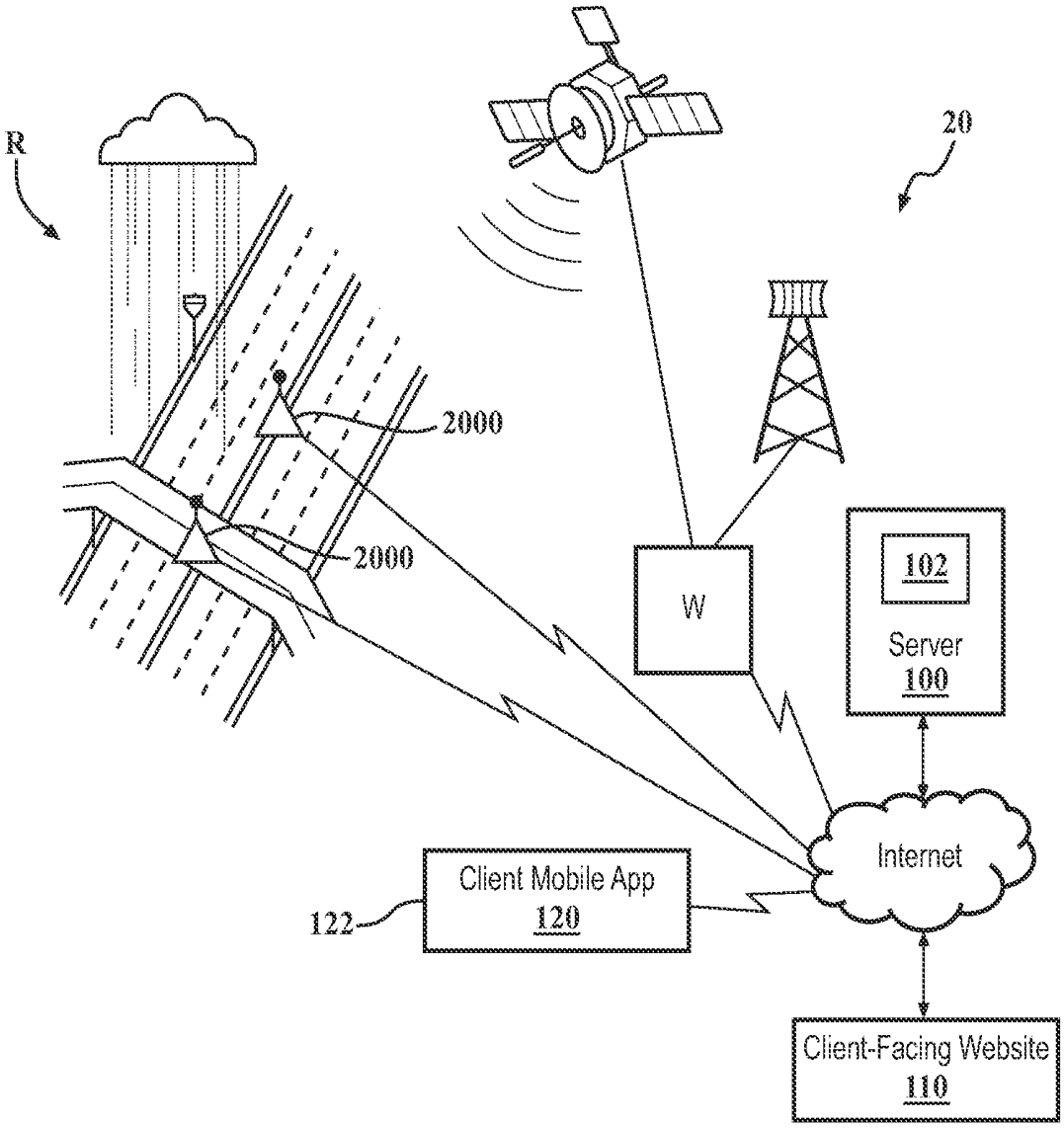
Publication Classification

(51) **Int. Cl.**
G06Q 10/0631 (2006.01)
G06Q 50/08 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06313*** (2013.01); ***G06Q 50/08*** (2013.01)

(57) **ABSTRACT**

A computer implemented method for identifying weather related productivity impact events to a road construction project includes positioning one or more local weather stations at a particular geographic location that is the subject of a road construction project; receiving, at one or more processors, weather data from the one or more local weather stations; comparing, at the one or more processors, the received weather data with one or more predetermined weather limits; generating, using the one or more processors, one or more notifications specifying one or more predetermined weather limits violated by the received weather data; and communicating the one or more notifications to a user associated with the road construction projects.



US 20240420090A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420090 A1**

Yarosh (43) **Pub. Date: Dec. 19, 2024**

(54) **SYSTEM AND METHOD FOR AI-BASED MATCHING OF EMPLOYMENT CANDIDATES**

(71) Applicant: **Rick Yarosh**, Boca Raton, FL (US)

(72) Inventor: **Rick Yarosh**, Boca Raton, FL (US)

(21) Appl. No.: **18/210,273**

(22) Filed: **Jun. 15, 2023**

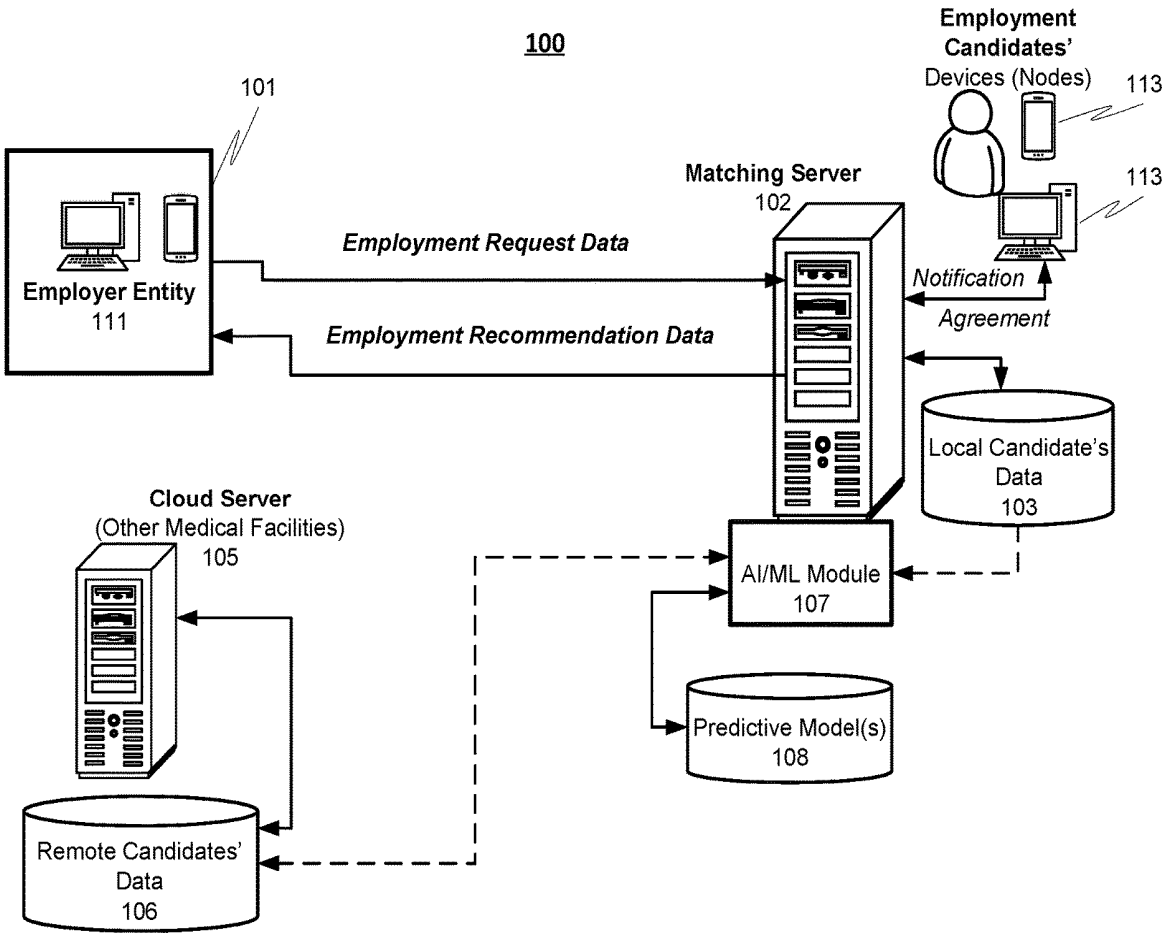
Publication Classification

(51) **Int. Cl.**
G06Q 10/1053 (2006.01)
G06Q 10/0631 (2006.01)

(52) **U.S. Cl.**
CPC . ***G06Q 10/1053*** (2013.01); ***G06Q 10/063112*** (2013.01)

(57) **ABSTRACT**

A system for an automated matching of employment/job engagement candidates to an employer including a processor of a matching server node configured to host a machine learning (ML) module and a memory on which are stored machine-readable instructions that when executed by the processor, cause the processor to: receive employment request data from the employer entity node; parse the employment request data to derive a plurality of features; query a local candidates database to retrieve local historical candidate-related data collected at a location of previous employment based on the plurality of features; generate at least one feature vector based on the plurality of features and the historical candidate-related data; and provide the at least one feature vector to the ML module for generating a predictive model configured to produce at least one employment parameter for generation of an employment-related notification to the at least one candidate entity node.



US 20240420038A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0420038 A1

KATZ et al. (43) Pub. Date: Dec. 19, 2024

(54) **SYMMETRY PRUNING TO INCREASE PLANNER SPEED**

(71) Applicant: **INTERNATIONAL BUSINESS MACHINES CORPORATION**, Armonk, NY (US)

(72) Inventors: **Michael KATZ**, Goldens Bridge, NY (US); **Junkyu LEE**, San Diego, CA (US)

(21) Appl. No.: **18/342,817**

(22) Filed: **Jun. 28, 2023**

Related U.S. Application Data

(60) Provisional application No. 63/508,492, filed on Jun. 15, 2023.

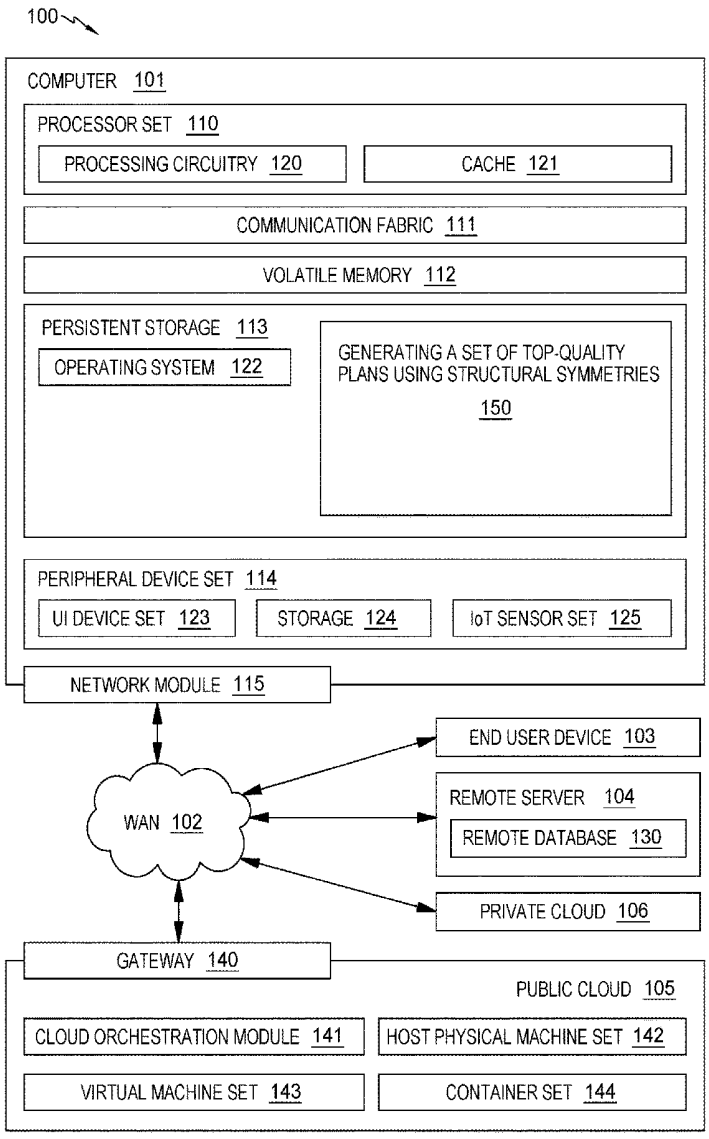
Publication Classification

(51) **Int. Cl.**
G06Q 10/04 (2006.01)

(52) **U.S. Cl.**
CPC *G06Q 10/04* (2013.01)

(57) **ABSTRACT**

Computer implemented methods, systems, and computer program products include program code executing on a processor(s) that obtains a planning problem. The program code obtains a bound on a number of plans (to address the planning problem). The program code identifies symmetries of the planning problem. The program code utilizes the symmetries to identify an orbit search space of the planning problem. The program code executes a two-phase search iteratively over the orbit space to identify surrogate plans in the orbit space. The program code generates new plans by utilizing the surrogate plans and the symmetries of the planning problem to map the surrogate plans to new plans. The program code extends the new plans. The extended new plans comprise the set of solutions for the planning problem.



(19) Deutsches Patent- und Markenamt

(10) **DE 10 2023 115 733 A1** 2024.12.19

(12) # Offenlegungsschrift

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(43) Offenlegungstag: **19.12.2024**

(51) Int Cl.: ***B25J 13/08*** (2006.01)
B25J 9/16 (2006.01)

(71) Anmelder:
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(74) Vertreter:
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(56) Ermittelter Stand der Technik:

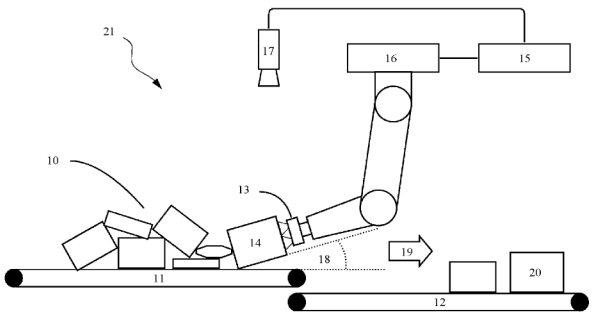
DE	10 2018 101 375	A1
DE	10 2021 121 063	A1
DE	11 2017 004 070	T5
US	9 764 675	B1
US	10 363 664	B2
US	10 906 188	B1

Prüfungsantrag gemäß § 44 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen.

(54) Bezeichnung: **Verfahren zur Vereinzelung eines verpackten Guts mittels eines Roboterarms und Vorrichtung umfassend einen Roboterarm zur Vereinzelung eines verpackten Guts**

(57) Zusammenfassung: Die Erfindung betrifft ein Verfahren zur Vereinzelung von verpackten Gütern (10, 14, 20) mittels mindestens eines Roboterarms (13), umfassend folgende Schritte:
a. Erstellen einer Messwertmatrix der verpackten Güter (10, 14) mittels mindestens eines Sensors (17);
b. Ermitteln einer Ausdehnung, eines Bedeckungszustands, einer Position und/oder einer Ausrichtung mindestens eines bestimmten Guts (14) der verpackten Güter (10, 14, 20) mittels Inferenz mit einem statistischen Modell und/oder mittels eines Näherungsverfahrens unter Eingabe der Messwertmatrix;
c. Erstellen eines Steuerungsdatensatzes für den Roboterarm (13) unter Berücksichtigung der Ausdehnung, des Bedeckungszustands, der Position und/oder der Ausrichtung des bestimmten Guts (14);
d. Ergreifen des bestimmten Guts (14) mittels des Roboterarms (13) nach dem Steuerungsdatensatz; und
e. Vereinzeln des bestimmten Guts (14) von den anderen verpackten Gütern (10) unter mindestens einer ziehenden und vereinzelnden Bewegung (19) nach dem Steuerungsdatensatz mittels des Roboterarms (13).
Des Weiteren betrifft die Erfindung eine Vorrichtung (21) zur Vereinzelung von verpackten Gütern (10, 14, 20), umfassend mindestens einen Roboterarm (13), mindestens einen Sensor (17) und ein Computersystem (15).



US 20240420037A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0420037 A1**

(43) **Pub. Date: Dec. 19, 2024**

Wang et al.

(54) **USING COMPUTER MODEL TO DETERMINE AVAILABILITY OF SERVICE OPTION FOR DELIVERY OF ORDER PLACED WITH ONLINE SYSTEM**

(71) Applicant: **Maplebear Inc. (dba Instacart)**, San Francisco, CA (US)

(72) Inventors: **Zi Wang**, Mountain View, CA (US); **Houtao Deng**, Sunnyvale, CA (US); **Xiangyu Wang**, San Jose, CA (US); **Ganesh Krishnan**, San Francisco, CA (US); **Aman Jain**, Barrie (CA)

(21) Appl. No.: **18/210,976**

(22) Filed: **Jun. 16, 2023**

Publication Classification

(51) **Int. Cl.**

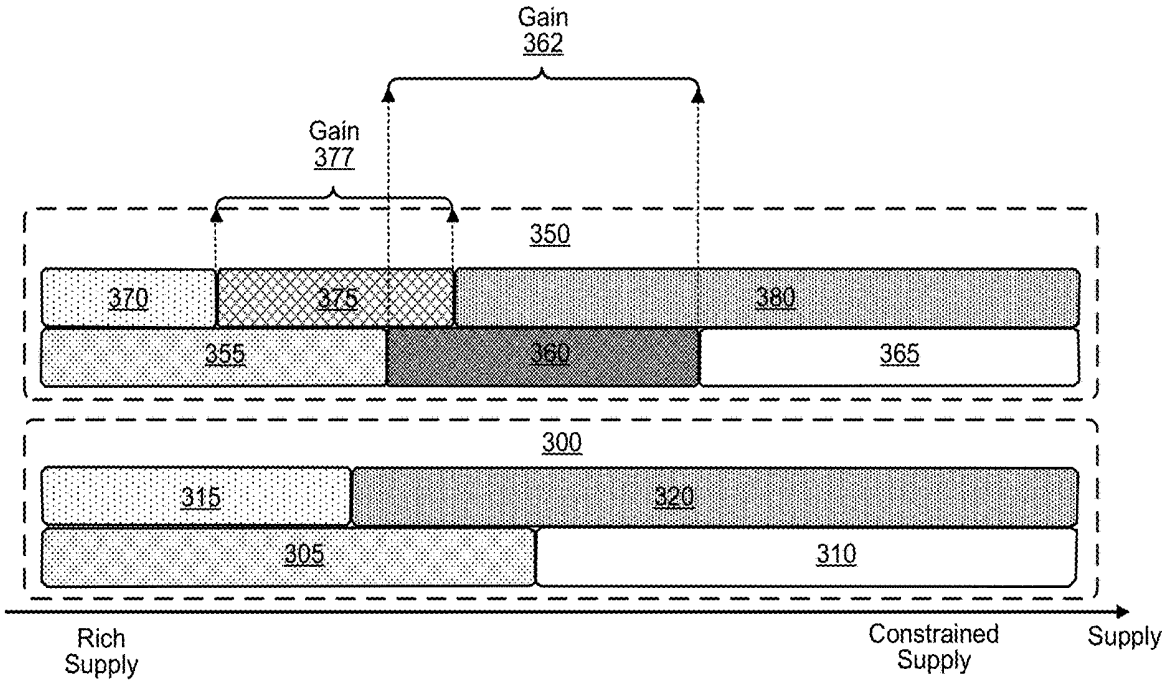
G06Q 10/04	(2006.01)
G06Q 10/083	(2006.01)
G06Q 30/0601	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/04*** (2013.01); ***G06Q 10/083*** (2013.01); ***G06Q 30/0601*** (2013.01)

(57) **ABSTRACT**

Embodiments relate to determining an availability of a service option for delivery of an order placed with an online system. The online system receives an order placed with the online system. The online system accesses a computer model trained to predict a value of metric for an order placed with the online system. The online system applies the computer model to predict the value of the metric for the order. The online system determines which service option of a plurality of service options of the online system is available for delivery of the order, based at least in part on the predicted value of the metric and a threshold. The online system causes the device of the user to display an availability of the determined service option for delivery of the order.



US 20240420077A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0420077 A1**

(43) **Pub. Date: Dec. 19, 2024**

Bunch

(54) **PACKAGE SORTATION SYSTEM**

(71) Applicant: **Adam Bunch**, Mission Viejo, CA (US)

(72) Inventor: **Adam Bunch**, Mission Viejo, CA (US)

(21) Appl. No.: **18/583,789**

(22) Filed: **Feb. 21, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/521,676, filed on Jun. 18, 2023.

Publication Classification

(51) **Int. Cl.**

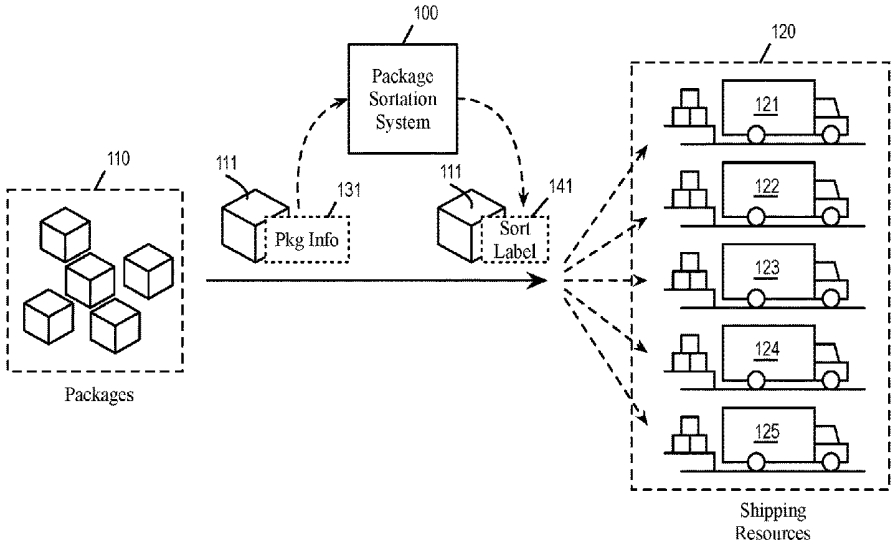
G06Q 10/087	(2006.01)
G06K 15/02	(2006.01)
G06Q 10/083	(2006.01)

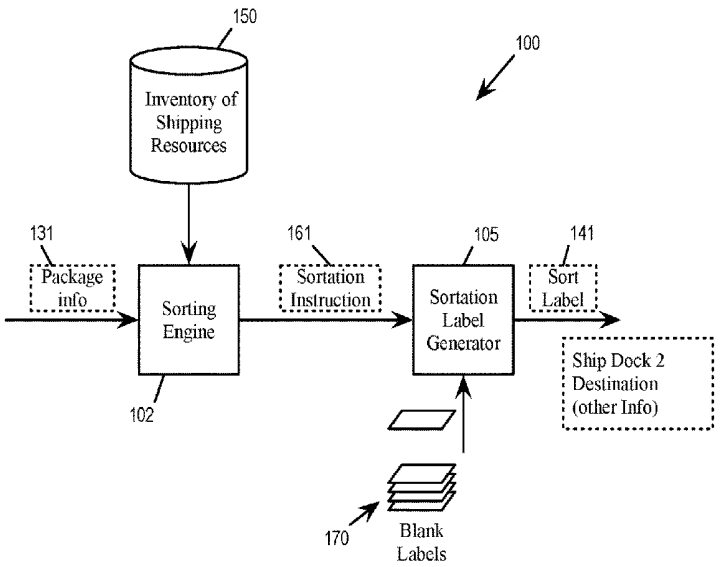
(52) **U.S. Cl.**

CPC ***G06Q 10/087*** (2013.01); ***G06K 15/024*** (2013.01); ***G06K 15/028*** (2013.01); ***G06Q 10/083*** (2013.01)

(57) **ABSTRACT**

A package sortation system is provided. The system receives an inventory of multiple shipping resources. The system receives a blank sortation label having three or more predefined regions, each predefined region associated with a unique color and is laced with a coloring agent of the region's unique color. The coloring agent remain invisible until activated to become visible with the region's unique color. The system extracts first and second data from a sortation instruction. The first data and the second data jointly identify one of the multiple shipping resources. The system selects one region of the three or more predefined region based on the first data, and a symbol (or pattern) based on the second data. The system prints the selected symbol on the selected region of the sortation label by activating the coloring agent of the selected region.





US 20240416505A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0416505 A1**

TAKEDA (43) **Pub. Date: Dec. 19, 2024**

(54) **CONVEYANCE DEVICE**

(71) Applicant: **AIDA ENGINEERING, LTD.**, Kanagawa (JP)

(72) Inventor: **Keisuke TAKEDA**, Sagamihara-shi (JP)

(21) Appl. No.: **18/741,374**

(22) Filed: **Jun. 12, 2024**

(30) **Foreign Application Priority Data**

Jun. 19, 2023 (JP) 2023-099997

Publication Classification

(51) **Int. Cl.**

B25J 9/10 (2006.01)

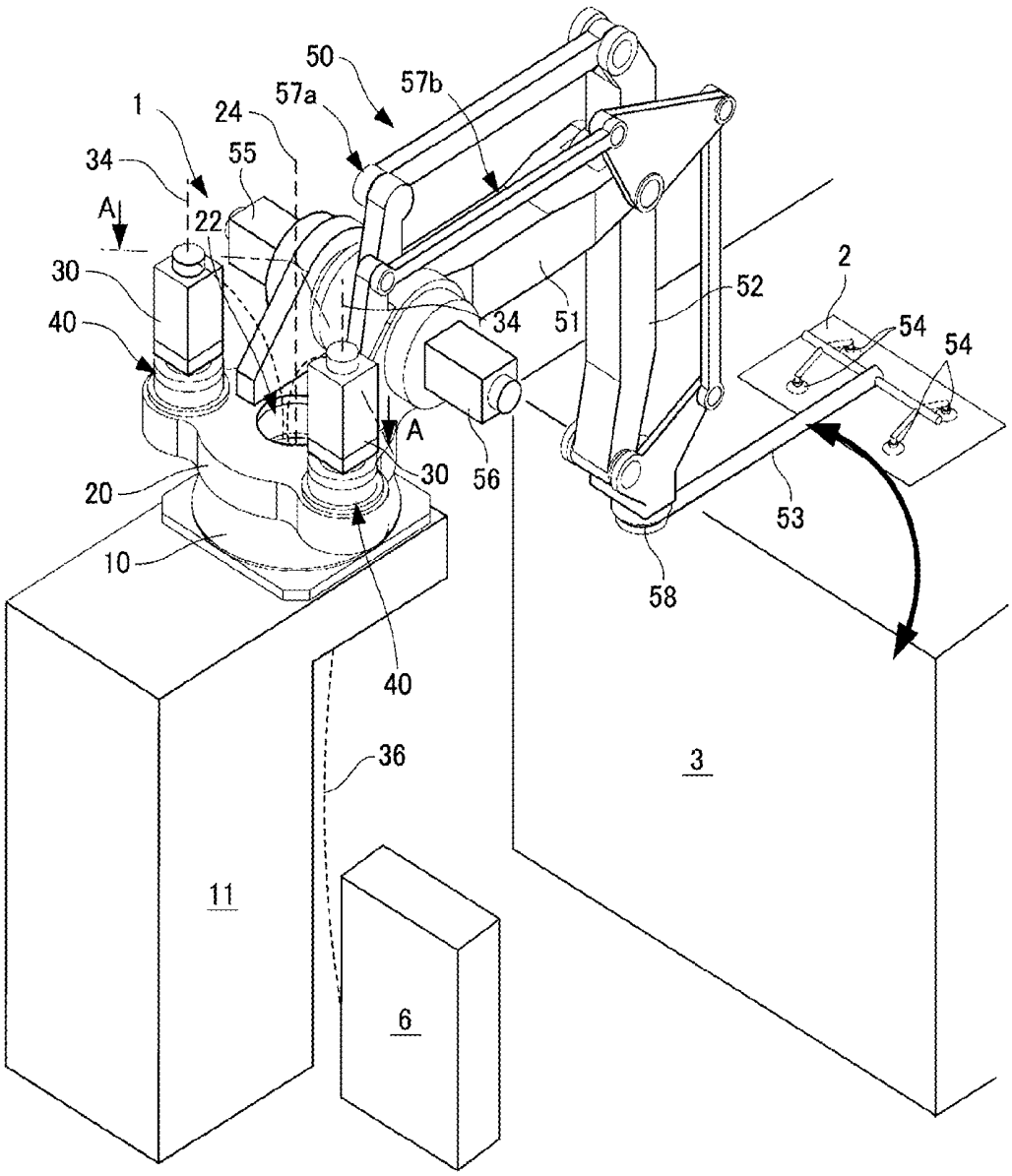
B25J 19/00 (2006.01)

(52) **U.S. Cl.**

CPC ***B25J 9/102*** (2013.01); ***B25J 19/0029*** (2013.01); ***B25J 19/0062*** (2013.01)

(57) **ABSTRACT**

A conveyance device includes a fixed base having a large gear, a turning body supported by the fixed base via a bearing, two or more servomotors, a conveyance arm, and two or more speed reducers. The speed reducer includes a housing integrated with the turning body, a planetary carrier rotatably supported inside the housing, an internal gear provided inside the housing, a sun gear connected to an output shaft of the servomotor, a plurality of planetary gears arranged around the sun gear and rotatably supported by the planetary carrier, and an output gear rotating integrally with the planetary carrier. The planetary gear meshes with the sun gear and meshes with the internal gear. The output gear has a smaller diameter than that of the large gear and meshes with the large gear outside the large gear.



US 20240420051A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420051 A1**

Makhijani et al. (43) **Pub. Date: Dec. 19, 2024**

(54) **ORDER-SPECIFIC EXPANSION OF AN AREA ENCOMPASSING PICKERS AVAILABLE FOR ACCEPTING ORDERS PLACED WITH AN ONLINE SYSTEM**

(71) Applicant: **Maplebear Inc. (dba Instacart)**, San Francisco, CA (US)

(72) Inventors: **Rahul Makhijani**, Daly City, CA (US); **Pak Tao Lee**, Foster City, CA (US); **Shang Li**, Jersey City, NJ (US)

(21) Appl. No.: **18/211,124**

(22) Filed: **Jun. 16, 2023**

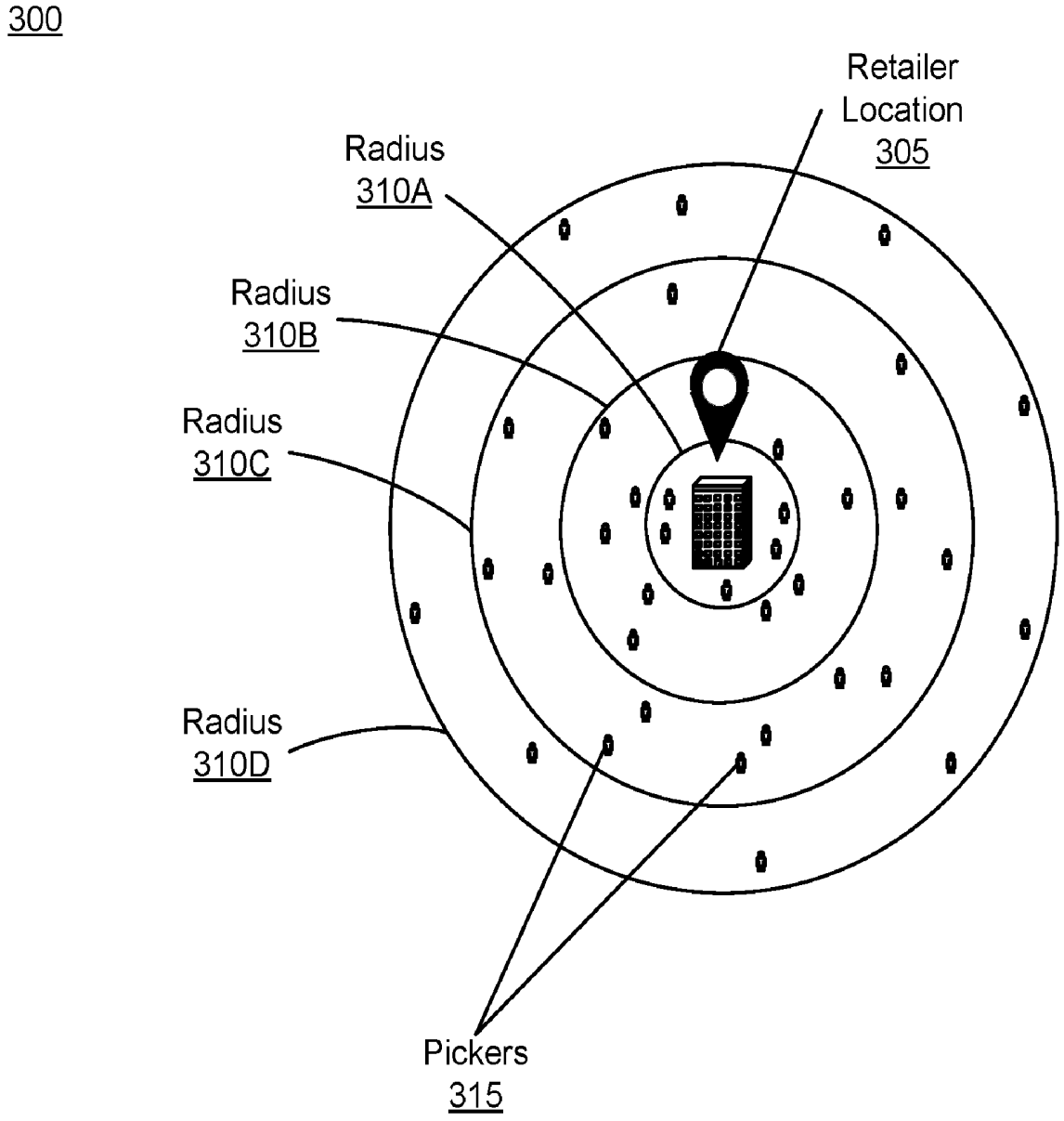
Publication Classification

(51) **Int. Cl.**
G06Q 10/0631 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06316*** (2013.01)

(57) **ABSTRACT**

Embodiments relate to order specific expansion of an area that encompasses pickers available for accepting an order placed with an online system. The online system accesses a computer model trained to predict an attractiveness metric for the order and applies the computer model to predict a value of the attractiveness metric for a first order. The online system classifies the first order into a first set or a second set, based on the value of the attractiveness metric and a threshold. Based on the classification, the online system expands over time a size of an area that encompasses a set of pickers available for accepting the first order. The online system causes a device of each picker in the set of available pickers located within the area of the expanded size to display an availability of the first order for acceptance by each picker in the set of available pickers.



US 20240420057A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0420057 A1**

(43) **Pub. Date: Dec. 19, 2024**

Arumugam et al.

(54) **SYSTEMS AND METHODS FOR COLLECTING AND DISPLAYING BUSINESS INSIGHTS IN A CLOUD-BASED SYSTEM**

(71) Applicant: **Zscaler, Inc.**, San Jose, CA (US)

(72) Inventors: **Umamaheswaran Arumugam**, San Jose, CA (US); **Varun Singh**, San Jose, CA (US); **Jun Xue**, San Jose, CA (US); **Chakkaravarthy Periyasamy Balaiah**, San Jose, CA (US); **Jasbir Kaushal**, Sunnyvale, CA (US); **Abhishek Bathla**, Panipat (IN); **Shankar Vivekanandan**, Alpharetta, GA (US); **Santhosh Kumar**, Bengaluru (IN); **Anoma Dhurka**, San Jose, CA (US); **Raj Krishna**, San Jose, CA (US); **Valentin Khechinashvili**, Alamo, CA (US); **Pranab Sharma**, San Jose, CA (US)

(73) Assignee: **Zscaler, Inc.**, San Jose, CA (US)

(21) Appl. No.: **18/739,699**

(22) Filed: **Jun. 11, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/507,955, filed on Jun. 13, 2023.

Publication Classification

(51) **Int. Cl.**
G06Q 10/0637 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/0637*** (2013.01)

(57) **ABSTRACT**

Systems and methods for collecting and displaying business insights in a cloud-based system. Steps include obtaining data from a cloud-based system associated with any of applications, infrastructure, and employees of an organization, wherein the cloud-based system includes a plurality of organizations with the applications, infrastructure, and employees each assigned thereto; processing the data associated with the organization to determine a plurality of insights; and displaying the plurality of insights on a per-organization basis based on the processing.

US 20240419941A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0419941 A1

He et al. (43) Pub. Date: Dec. 19, 2024

(54) **TRAINING DETECTION MODEL USING OUTPUT OF LANGUAGE MODEL APPLIED TO EVENT INFORMATION**

(71) Applicant: **Maplebear Inc. (dba Instacart)**, San Francisco, CA (US)

(72) Inventors: **Ze He**, Sunnyvale, CA (US); **Dian Ding**, Santa Clara, CA (US); **Hechao Sun**, Mountain View, CA (US)

(21) Appl. No.: **18/210,553**

(22) Filed: **Jun. 15, 2023**

Publication Classification

(51) **Int. Cl.**

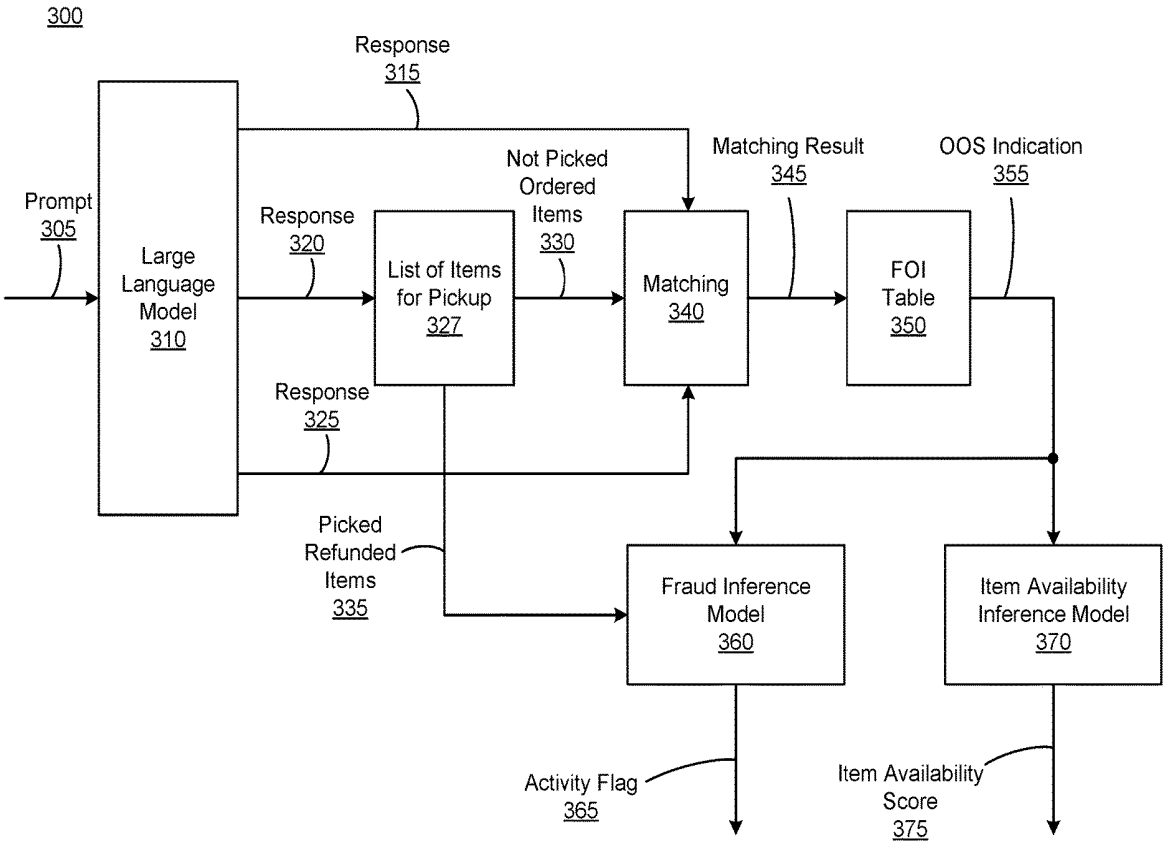
G06N 3/045	(2006.01)
G06N 3/084	(2006.01)
G06Q 10/087	(2006.01)
G06Q 20/40	(2006.01)
G06Q 30/0601	(2006.01)

(52) **U.S. Cl.**

CPC ***G06N 3/045*** (2023.01); ***G06N 3/084*** (2013.01); ***G06Q 10/087*** (2013.01); ***G06Q 20/407*** (2013.01); ***G06Q 30/0637*** (2013.01)

(57) **ABSTRACT**

Embodiments relate to an automatic detection of fraudulent behavior for a transaction at an online system. The online system requests a large language model (LLM) to determine, based on a prompt input into the LLM, information about a refund event for a first order placed by a user of the online system. The online system accesses a computer model trained to detect a fraudulent behavior associated with an order placed with the online system. The online system applies the computer model to determine a score associated with the refund event, based on the information about the refund event received from the LLM. The online system determines, based on the score, whether the refund event was due to a fraudulent behavior of the user. The online system performs at least one action associated with the online system, based on the determination whether the refund event was due to the fraudulent behavior.



US 20240419145A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0419145 A1**

Nickel (43) **Pub. Date: Dec. 19, 2024**

(54) **MODEL-TO-MACHINE-BASED SYSTEMS AND METHODS FOR OPERATING FABRICATION MACHINES FOR CUTTING AND BENDING MATERIAL**

(71) Applicant: **Allied BIM Inc.**, Bozeman, MT (US)

(72) Inventor: **Brian D. Nickel**, Meridian, ID (US)

(21) Appl. No.: **18/784,926**

(22) Filed: **Jul. 26, 2024**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/458,274, filed on Aug. 30, 2023, which is a continuation-in-part of application No. 18/319,474, filed on May 17, 2023, now Pat. No. 11,907,618.

(60) Provisional application No. 63/345,671, filed on May 25, 2022, provisional application No. 63/343,079, filed on May 17, 2022.

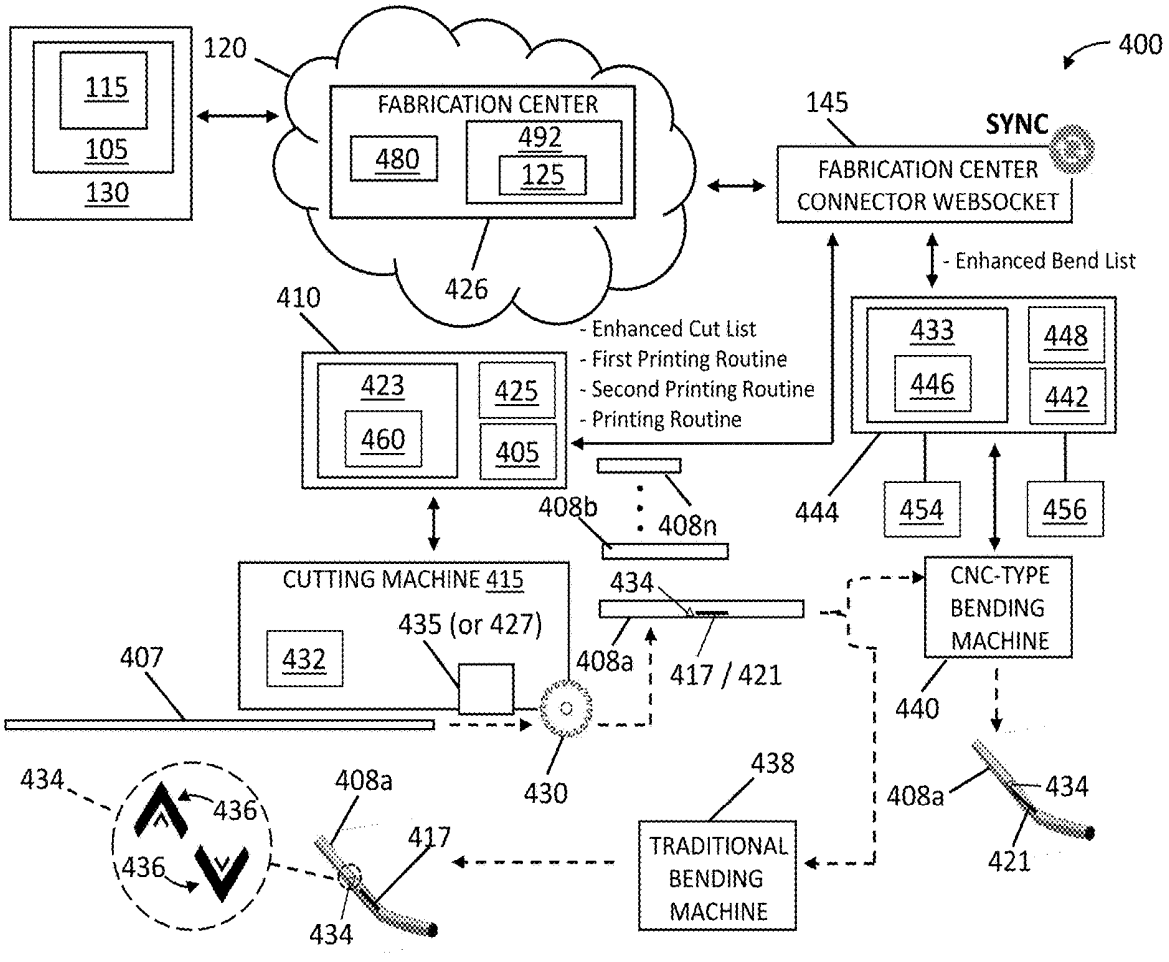
Publication Classification

(51) **Int. Cl.**
G05B 19/402 (2006.01)
G05B 19/4099 (2006.01)

(52) **U.S. Cl.**
CPC ***G05B 19/402*** (2013.01); ***G05B 19/4099*** (2013.01); *G05B 2219/33099* (2013.01)

(57) **ABSTRACT**

A method facilitating operation of a fabrication machines includes generating, by a fabrication center application (FCA): an enhanced cut list (ECL) usable by a cutting machine control application (CMCA) to direct a cutting machine (CM) to cut a work piece (WP) into ≥2 pieces; an enhanced bend list including x,y,z positional information (PI) for bending ≥1 piece(s) of the ≥2 pieces at least once; and etching routine(s) (PR) for etching human- and/or computer-readable bend instructions (BI) including the x,y,z PI on the WP or the ≥1 piece(s); and transmitting, by the FCA, and via a fabrication center connector websocket: the ECL to a fabrication desktop application (FDA) of the CM to enable use of the ECL by the CMCA to cut the WP; and the PR(s) to the FDA and/or an etcher to enable use thereby to etch the BI(s) on ≥1 location(s) on the WP or the ≥1 piece(s).



US 20240419462A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0419462 A1

NOVAK et al. (43) Pub. Date: Dec. 19, 2024

(54) **SYSTEM AND METHOD TO CAPTURE DIGITAL EXPERIENCES TO SUPPORT GUIDED TRAINING, PROCESS AND PROCEDURES AND JOB AIDS**

(71) Applicant: **JPMorgan Chase Bank, N.A.**, New York, NY (US)

(72) Inventors: **Jamie NOVAK**, Sunbury, OH (US); **Paul D. MAGASINY**, Kennett Square, PA (US); **David SELPH**, Darien, CT (US)

(73) Assignee: **JPMorgan Chase Bank, N.A.**, New York, NY (US)

(21) Appl. No.: **18/209,176**

(22) Filed: **Jun. 13, 2023**

Publication Classification

(51) **Int. Cl.**

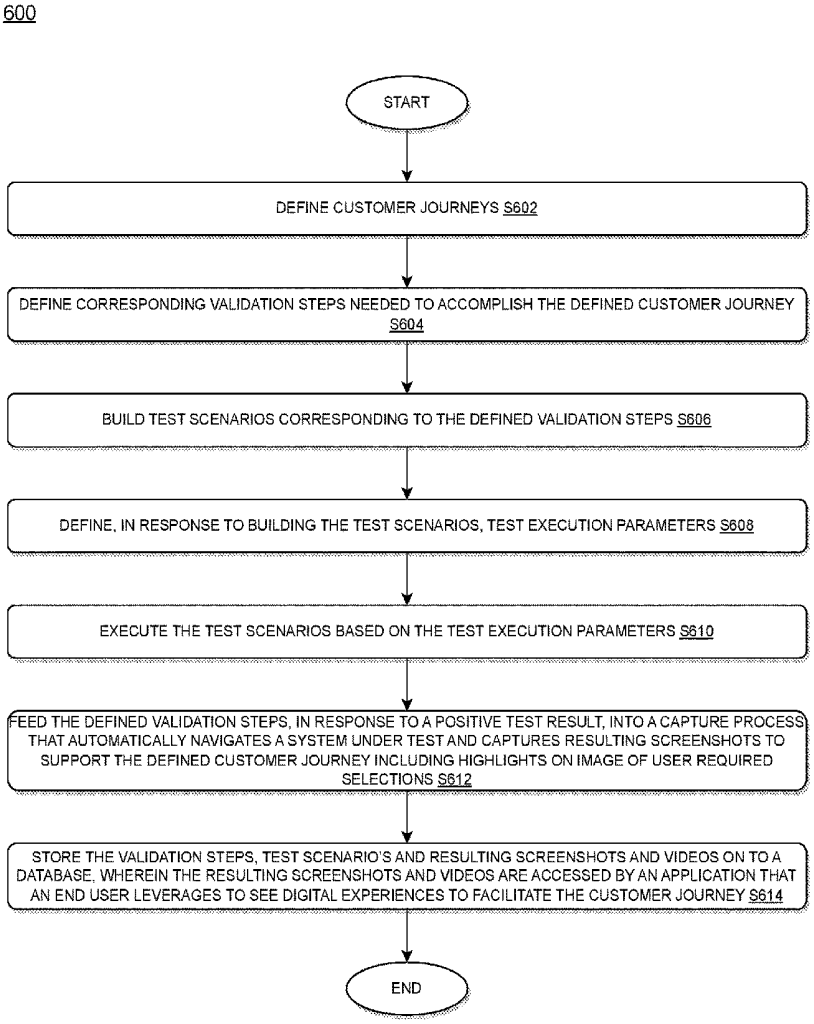
G06F 9/451	(2006.01)
G06F 11/36	(2006.01)
G06Q 10/063	(2006.01)
G06Q 10/067	(2006.01)

(52) **U.S. Cl.**

CPC ***G06F 9/453*** (2018.02); ***G06F 11/3612*** (2013.01); ***G06F 11/3684*** (2013.01); ***G06F 11/3688*** (2013.01); ***G06Q 10/063*** (2013.01); ***G06Q 10/067*** (2013.01)

(57) **ABSTRACT**

Various methods and processes, apparatuses/systems, and media for systemically and dynamically capturing digital experiences are disclosed. This disclosure presents methods and apparatuses for implementing a platform, language, cloud, and database agnostic automatic digital experiences capturing module configured to systemically and dynamically capture digital experiences to support guided training, process and procedures, and job aids. Customer journeys and corresponding validation steps are defined; test scenarios and defines test execution parameters are built. These definitions and configurations built are called by a scheduler, on a recurring basis, which executes the test scenarios against a system under test; and captures the resulting screenshots, videos, and interactions including highlights on image of user required selections. Results are then published and captured into an Experience database. A narrative author adds instructional text or context narratives which are linked to test scenario steps to the database.



US 20240416528A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0416528 A1

Adler et al. (43) Pub. Date: Dec. 19, 2024

(54) SYSTEM AND METHOD FOR AUTOMATED EXPERIMENTATION

(71) Applicant: **Spaero Inc.**, San Francisco, CA (US)

(72) Inventors: **Mitchell Adler**, San Francisco, CA (US); **Robin Whitmore**, San Francisco, CA (US)

(73) Assignee: **Spaero Inc.**, San Francisco, CA (US)

(21) Appl. No.: **18/813,942**

(22) Filed: **Aug. 23, 2024**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/380,122, filed on Oct. 13, 2023, now Pat. No. 12,097,608, which is a continuation of application No. 18/111,366, filed on Feb. 17, 2023, now Pat. No. 11,850,729.

(60) Provisional application No. 63/311,343, filed on Feb. 17, 2022.

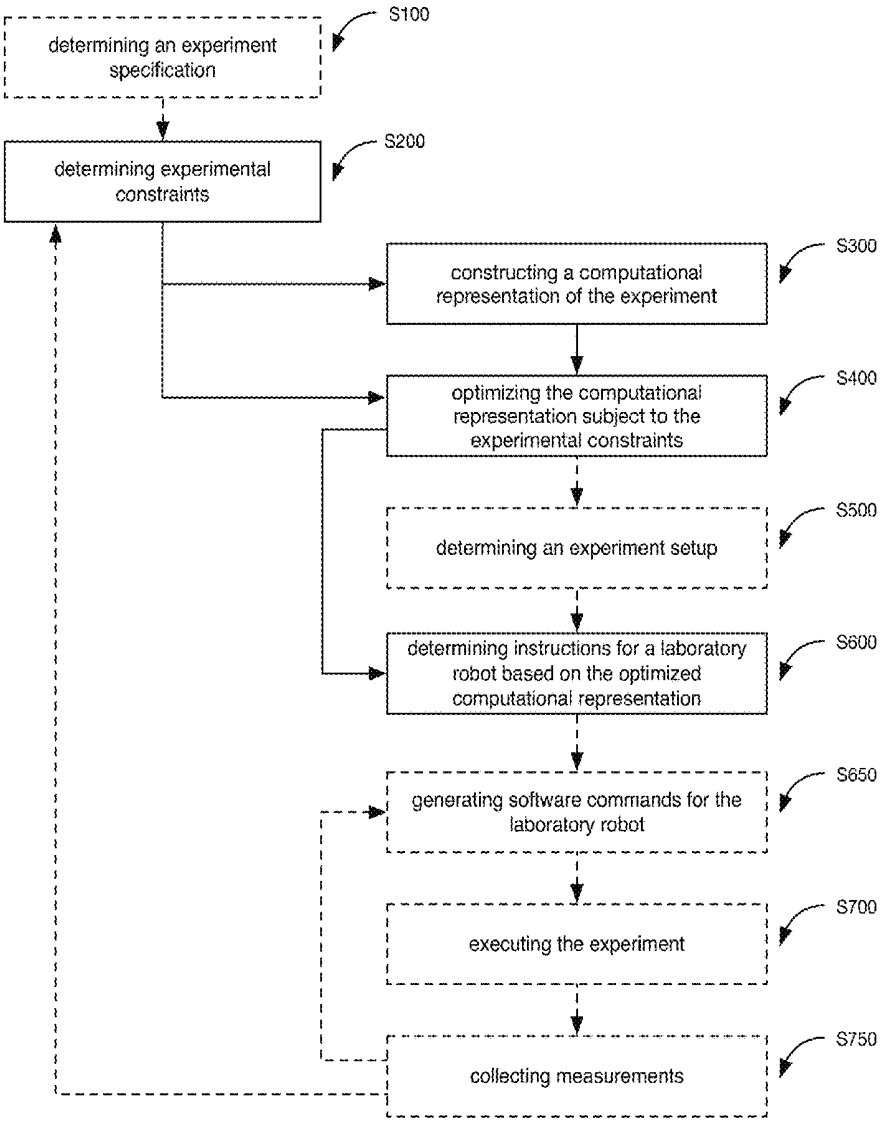
Publication Classification

(51) **Int. Cl.**
B25J 13/06 (2006.01)
G05B 19/4155 (2006.01)

(52) **U.S. Cl.**
CPC ***B25J 13/06*** (2013.01); ***G05B 19/4155*** (2013.01); *G05B 2219/31392* (2013.01); *G05B 2219/50391* (2013.01)

(57) **ABSTRACT**

The method for automated experimentation can include: determining experimental constraints, constructing a computational representation of the experiment, optimizing the computational representation subject to the experimental constraints, determining instructions for a laboratory robot based on the optimized computational representation, and/or any other suitable steps. The system including: a laboratory robot system (e.g., a liquid handling robot system), a deck, a user interface, and/or any other suitable components.



US 20240416530A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0416530 A1**

Kim (43) **Pub. Date: Dec. 19, 2024**

(54) **PRECISION HANDLING SYSTEM WITH COMPLIANT GRIPPER**

(71) Applicant: **FEI Company**, Hillsboro, OR (US)

(72) Inventor: **Jae Kim**, Lake Oswego, OR (US)

(21) Appl. No.: **18/335,759**

(22) Filed: **Jun. 15, 2023**

Publication Classification

(51) **Int. Cl.**

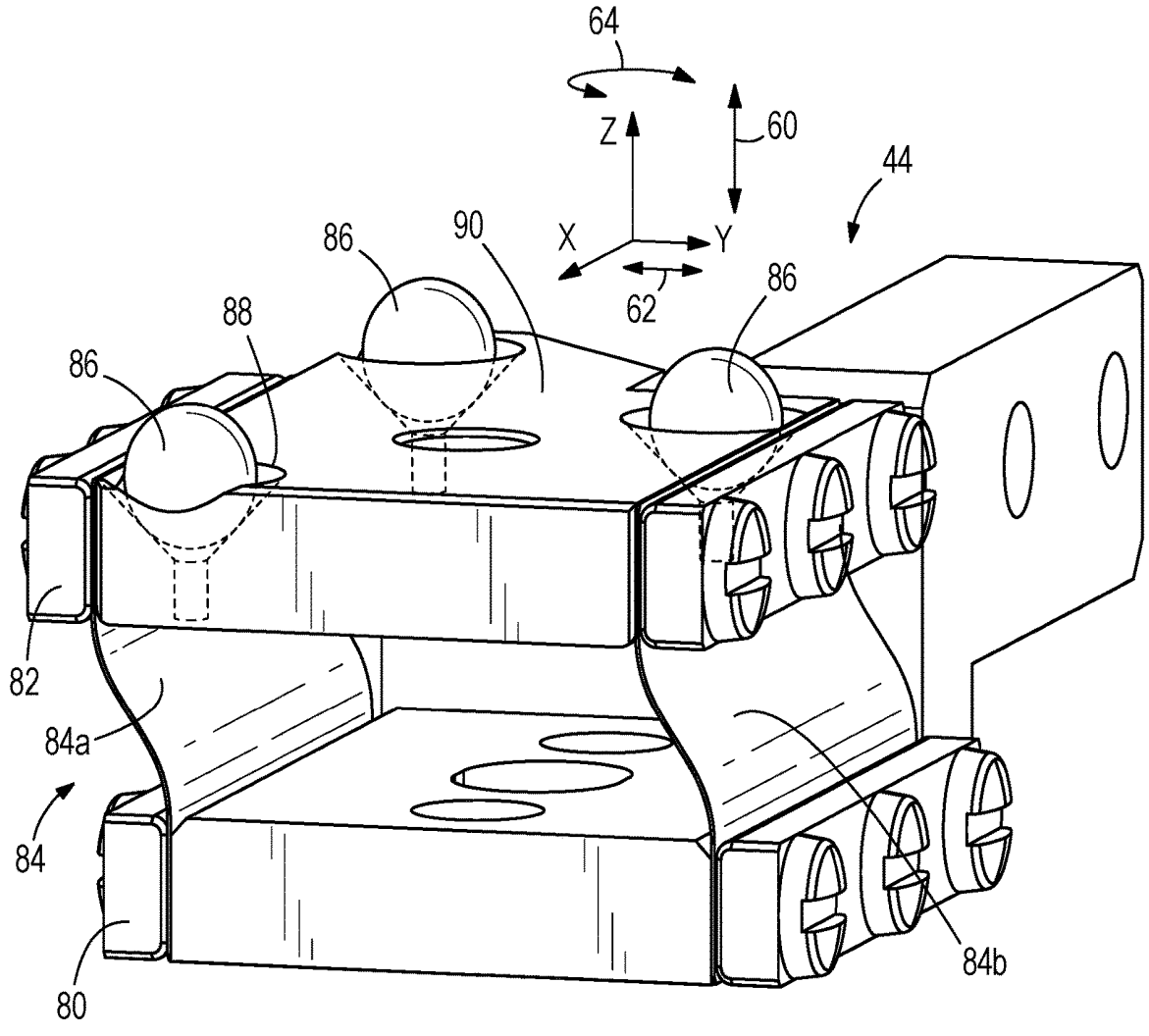
B25J 15/00	(2006.01)
B25J 9/16	(2006.01)

(52) **U.S. Cl.**

CPC ***B25J 15/0033*** (2013.01); ***B25J 9/1664*** (2013.01)

(57) **ABSTRACT**

A precision handling system including a gripper, a flexure, and a ball transfer. The gripper includes a first jaw and a second jaw configured to provide a gripping force therebetween for gripping and moving an object. The flexure is coupled to the gripper and configured to provide compliance in at least one direction. The ball transfer is coupled to the gripper. The ball transfer includes a ball configured to engage the object to transfer the gripping force thereto and configured to spherically rotate to allow the object to move with respect to the first jaw.



(19) RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE

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(11) **N° de publication :** ***3 149 815***

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(21) **N° d'enregistrement national :** **23 06021**

(51) Int Cl[8] : ***B 25 J 17/02*** *(2023.01), B 25 J 15/00*

(12) DEMANDE DE BREVET D'INVENTION A1

(22) **Date de dépôt :** 13.06.23.

(30) **Priorité :**

(43) **Date de mise à la disposition du public de la demande :** 20.12.24 Bulletin 24/51.

(56) **Liste des documents cités dans le rapport de recherche préliminaire :** *Se reporter à la fin du présent fascicule*

(60) **Références à d'autres documents nationaux apparentés :**

( ) **Demande(s) d'extension :**

(71) **Demandeur(s) :** *MINTAKA SYSTEM INNOVATION Sarl* — FR.

(72) **Inventeur(s) :** HECK Aurélien.

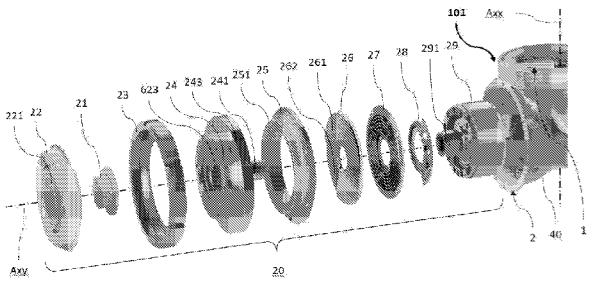
(73) **Titulaire(s) :** MINTAKA SYSTEM INNOVATION Sarl.

(74) **Mandataire(s) :** ALTER ALIA.

(54) Module de bras de robot motorisé équipé d'un contacteur tournant pour le transfert d'énergie et/ou de données.

(57) Il est proposé un module de bras motorisé (101) pour un bras de robot d'un robot industriel, ayant un boîtier creux (40) avec une première extrémité (1) dotée d'un connecteur fixe (10) et une deuxième extrémité (2) dotée d'un connecteur rotatif (20). Pour la transmission de données et/ou d'énergie électrique compatible avec la rotation, le module de bras comprend un contacteur tournant plat, formé d'un premier disque (27) et d'un second disque (26) coaxiaux, adjacents le long de l'axe de rotation (Axy) du connecteur rotatif (20). Les disques comprennent des faces de contact électrique respectives tournées l'une vers l'autre, et des faces opposées pour le raccordement électrique du contacteur tournant au connecteur fixe et au connecteur rotatif (20) ou à une carte électronique embarquée (50), respectivement. Le module de bras robotisé présente ainsi un encombrement axial réduit, et indépendant du nombre de fils requis.

Figure pour l'abrégé : Figure 5



FR 3 149 815 - A1

US 20240419304A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0419304 A1

Lee et al. (43) Pub. Date: Dec. 19, 2024

(54) METHOD FOR CONTROLLING HOUSEHOLD APPLIANCES USING AUGMENTED REALITY

(71) Applicant: **Haier US Appliance Solutions, Inc.**, Wilmington, DE (US)

(72) Inventors: **JaeHyo Lee**, Seoul (KR); **Hang Il Ahn**, Seoul (KR)

(21) Appl. No.: **18/335,829**

(22) Filed: **Jun. 15, 2023**

Publication Classification

(51) **Int. Cl.**

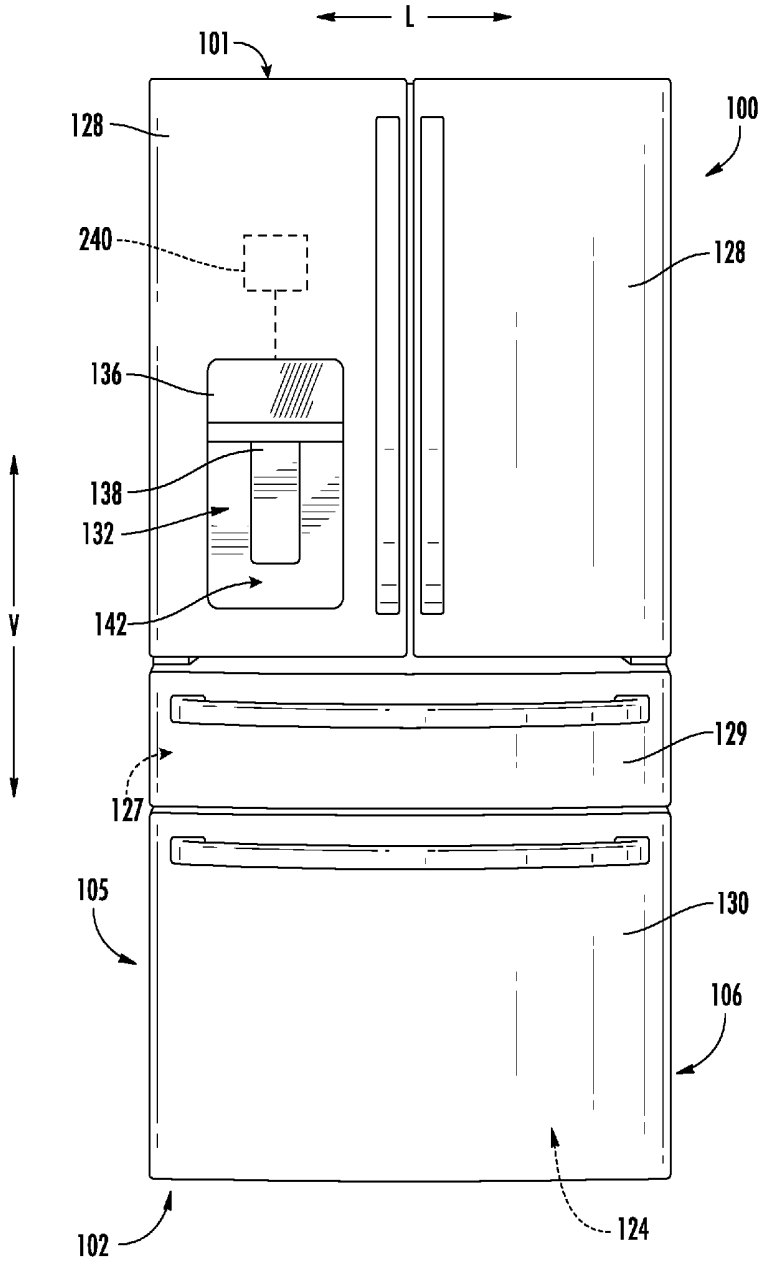
G06F 3/0484	(2006.01)
G05B 19/042	(2006.01)
G06F 3/0482	(2006.01)
G06T 11/00	(2006.01)

(52) **U.S. Cl.**

CPC ***G06F 3/0484*** (2013.01); ***G05B 19/042*** (2013.01); ***G06F 3/0482*** (2013.01); ***G06T 11/00*** (2013.01); *G05B 2219/23238* (2013.01); *G06T 2200/24* (2013.01)

(57) **ABSTRACT**

A method of controlling a household appliance includes setting, within an augmented reality note, control commands for the household appliance. The method also included receiving, on a remote user interface device, the augmented reality note. The method further includes activating the household appliance based on the control commands set within the received augmented reality note.



(19) Deutsches Patent- und Markenamt

(10) **DE 10 2023 205 530 A1** 2024.12.19

(12) # Offenlegungsschrift

(21) Aktenzeichen: **10 2023 205 530.9**
(22) Anmeldetag: **14.06.2023**
(43) Offenlegungstag: **19.12.2024**

(51) Int Cl.: ***G06Q 50/40*** (2024.01)
G06Q 10/08 (2024.01)

(71) Anmelder:
VOLKSWAGEN AKTIENGESELLSCHAFT, 38440 Wolfsburg, DE

(72) Erfinder:
Bader, Viktor, Dr., 38448 Wolfsburg, DE

(56) Ermittelter Stand der Technik:

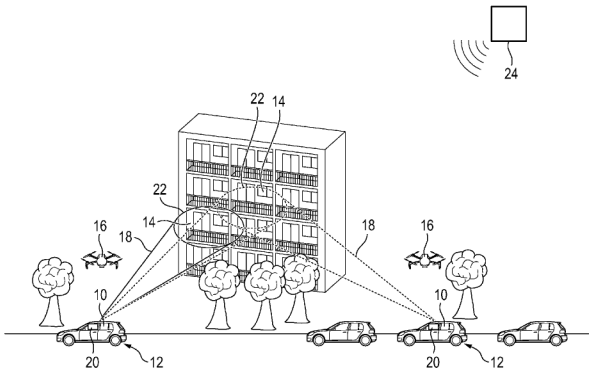
DE	**10 2009 028 024**	**A1**
DE	**10 2012 216 994**	**A1**
DE	**10 2016 010 690**	**A1**
DE	**10 2019 116 087**	**A1**
DE	**10 2022 112 121**	**A1**
US	**11 495 135**	**B2**
US	**2021 / 0 174 301**	**A1**

Rechercheantrag gemäß § 43 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen.

(54) Bezeichnung: **Verfahren zur Zustellung einer Ware und autonomes Fahrzeug**

(57) Zusammenfassung: Die Erfindung betrifft ein Verfahren zur Zustellung einer Ware, wobei die Ware mittels eines ersten autonomen Fahrzeugs (10) bis zu einem Stellplatz (12) transportiert wird, der sich in einem vorbestimmten Abstand zu einem Zustellort (14) befindet, wobei ein zweites autonomes Fahrzeug (16), das durch das erste autonome Fahrzeug (10) zum Stellplatz (12) transportiert wird, die Ware von dem Stellplatz (12) zum Zustellort (14) transportiert.
Bei einem Verfahren, bei dem die Zustellung von Waren sicher und effizient erfolgen kann, ist vorgesehen, dass ein geeigneter Stellplatz (12) für das erste autonome Fahrzeug (10) mittels Schwarmdaten einer Fahrzeugflotte ermittelt wird.



US 20240420161A1

(19) **United States**

(12) **Patent Application Publication**

Shah et al.

(10) **Pub. No.: US 2024/0420161 A1**

(43) **Pub. Date: Dec. 19, 2024**

(54) **GENERATIVE AI BUSINESS INSIGHT REPORT USING LLMS**

(71) Applicant: **Zscaler, Inc.**, San Jose, CA (US)

(72) Inventors: **Raimi Shah**, Austin, TX (US); **Raj Krishna**, San Francisco, CA (US); **Aman Gangwar**, Bengaluru (IN); **Aditya Jayan**, San Ramon, CA (US)

(73) Assignee: **Zscaler, Inc.**, San Jose, CA (US)

(21) Appl. No.: **18/814,816**

(22) Filed: **Aug. 26, 2024**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/535,104, filed on Dec. 11, 2023.

(60) Provisional application No. 63/507,958, filed on Jun. 13, 2023.

Publication Classification

(51) **Int. Cl.**

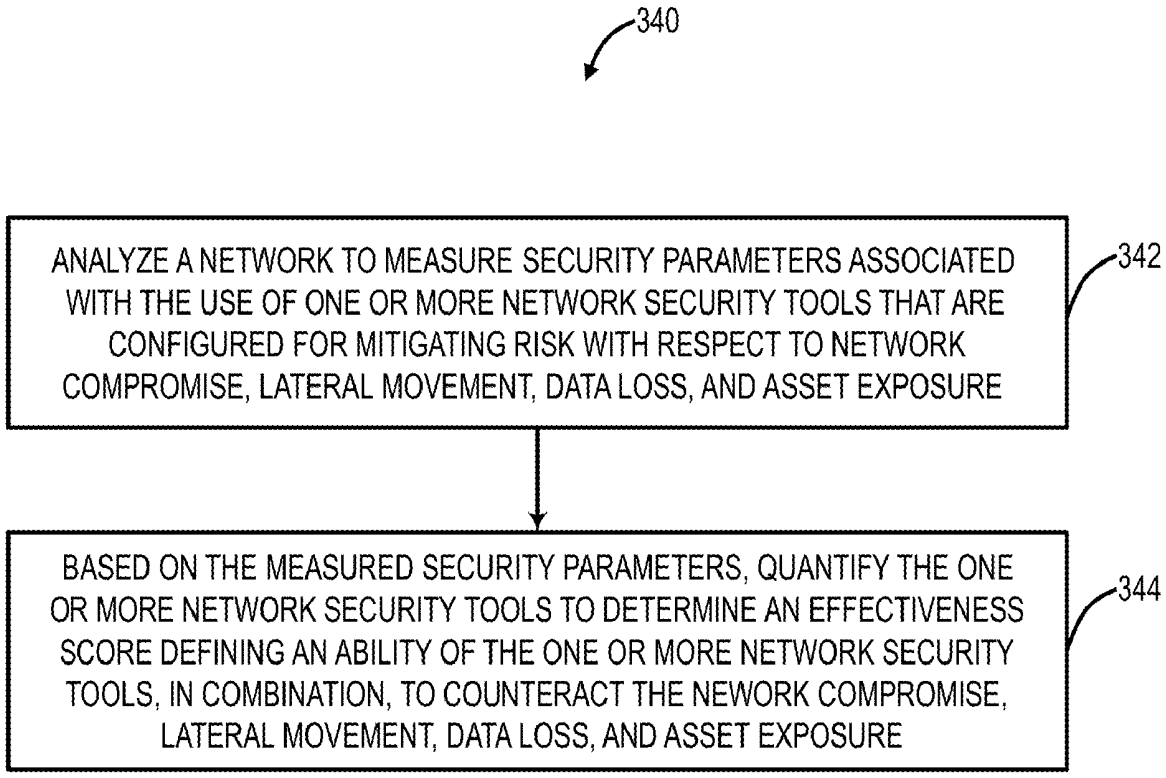
G06Q 30/018	(2006.01)
G06Q 10/0635	(2006.01)
G06Q 10/0637	(2006.01)
G06Q 10/067	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 30/018*** (2013.01); ***G06Q 10/0635*** (2013.01); ***G06Q 10/06375*** (2013.01); ***G06Q 10/067*** (2013.01)

(57) **ABSTRACT**

Systems and methods for Large Language Models (LLMs) to generate an Artificial Intelligence (AI) business insight report using business insight data include obtaining business insight data for an organization where the business insight data is from a plurality of sources including from monitoring of a plurality of users associated with the organization; inputting the business insight data to a first Large Language Model (LLM) to generate an initial output for a business insight report; inputting the initial output to a second LLM for critiquing the initial output against a set of rules to check for predefined flaws and to check for what was done correctly to generate a critique; resolving the initial output and the critique to generate a final output; and providing the final output for the business insight report.



US 20240420053A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420053 A1**

Madhavji (43) **Pub. Date: Dec. 19, 2024**

(54) **METHOD AND SYSTEM FOR TASK DISTRIBUTION IN AN ORGANIZATION**

(71) Applicant: **Milan Madhavji**, Mississauga (CA)

(72) Inventor: **Milan Madhavji**, Mississauga (CA)

(21) Appl. No.: **18/365,716**

(22) Filed: **Aug. 4, 2023**

(30) **Foreign Application Priority Data**

Jun. 13, 2023 (CA) 3203201

Publication Classification

(51) **Int. Cl.**

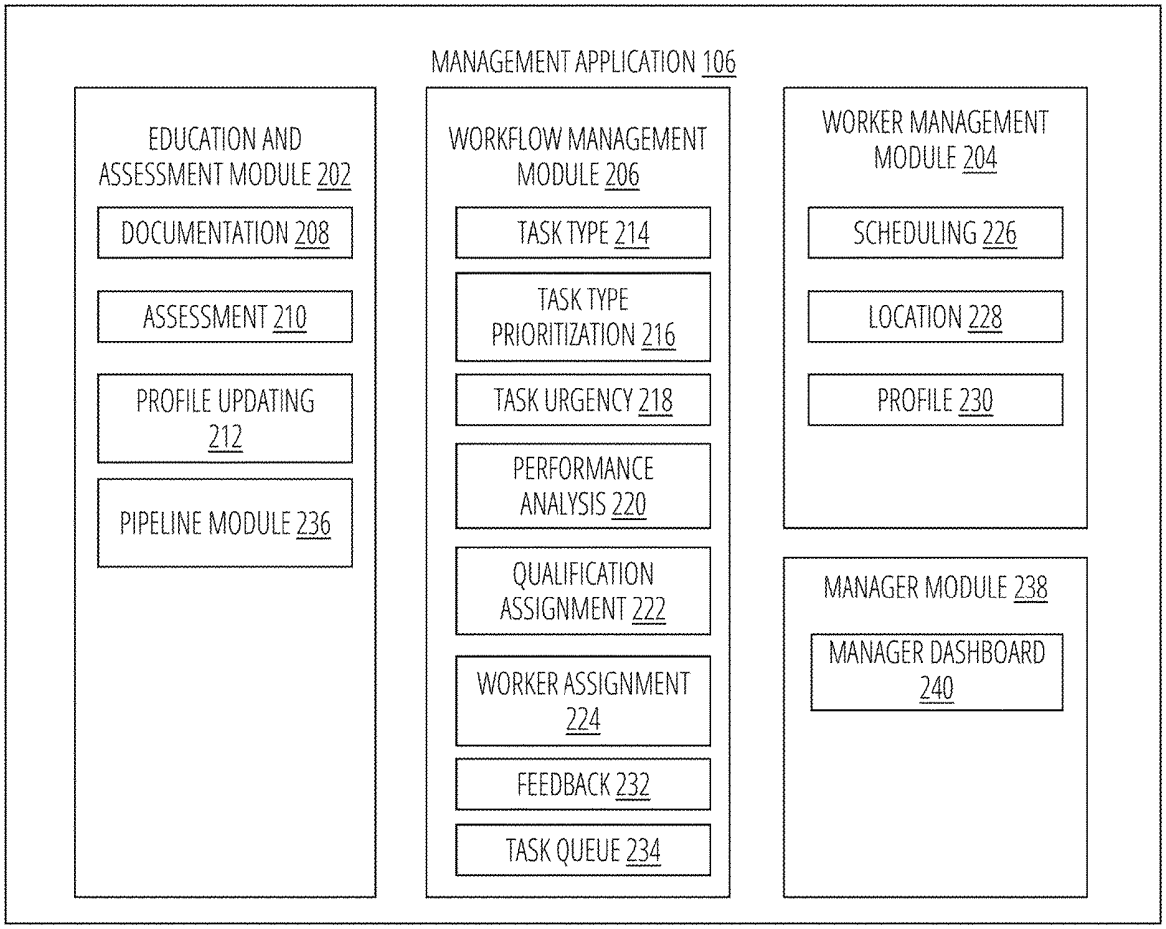
G06Q 10/0633 (2006.01)
G06Q 10/0631 (2006.01)
G06Q 10/1093 (2006.01)

(52) **U.S. Cl.**

CPC . ***G06Q 10/0633*** (2013.01); ***G06Q 10/063112*** (2013.01); ***G06Q 10/063114*** (2013.01); ***G06Q 10/1097*** (2013.01)

(57) **ABSTRACT**

There is provided a method for assigning a task to a worker including identifying a plurality of task types within which each task of a plurality of tasks is classifiable, prioritizing each type relative one another, sorting the tasks into a queue according to relative priority of the type with which each task is associated, identifying a plurality of worker profiles each having a subset of task types assignable to a worker associated with the profile and a weighting for each task type of the subset, and, assigning to one worker one task from the queue which corresponds with at least one task type of the subset of the profile, the one task being prioritized relative to other tasks in the queue according to relative priority of the type and where the type of the one task is weighted according to the weighting associated with the type of the subset.



US 20240419487A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0419487 A1**

(43) **Pub. Date: Dec. 19, 2024**

SHARMA et al.

(54) **PROACTIVE EXECUTION SYSTEM**

(71) Applicant: **Microsoft Technology Licensing, LLC**, Redmond, WA (US)

(72) Inventors: **Srinagesh SHARMA**, LONG ISLAND CITY, NY (US); **Christopher Quirk**, Seattle, WA (US); **Adam Douglas TROY**, Bothell, WA (US); **Aditya VASAL**, Redmond, WA (US); **Kuleen Haresh MEHTA**, Sammamish, WA (US); **Aleksandr MILANIN**, Bellevue, WA (US); **Deepak MISHRA**, Bothell, WA (US); **Kelvin Kawai TAM**, Bellevue, WA (US)

(21) Appl. No.: **18/334,768**

(22) Filed: **Jun. 14, 2023**

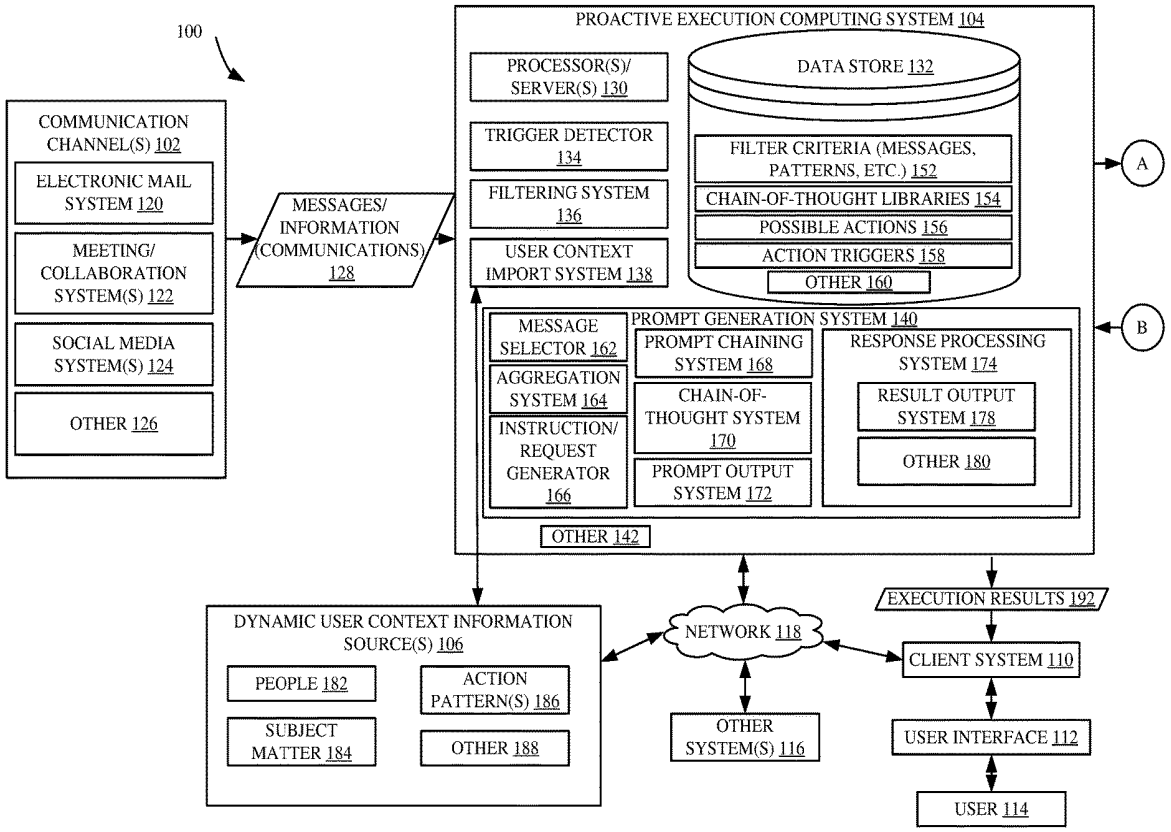
Publication Classification

(51) **Int. Cl.**
G06F 9/48 (2006.01)
H04L 51/18 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 9/4881*** (2013.01); ***H04L 51/18*** (2013.01)

(57) **ABSTRACT**

A proactive execution system receives messages or other information from a plurality of different information channels. The proactive execution system automatically identifies messages that include a request for a user to perform a task. The proactive execution system then automatically generates a plan for executing that task and calls a plan execution system, with the plan, to perform the task. The proactive execution system receives a result from the plan execution system and generates an output indicative of that result, for access by the user.



(19) Deutsches Patent- und Markenamt

(10) **DE 10 2023 205 658 A1** 2024.12.19

(12) # Offenlegungsschrift

(21) Aktenzeichen: **10 2023 205 658.5**
(22) Anmeldetag: **16.06.2023**
(43) Offenlegungstag: **19.12.2024**

(51) Int Cl.: ***G05B 13/00*** (2006.01)
G06N 3/08 (2023.01)
B60T 8/174 (2006.01)

(71) Anmelder:
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(72) Erfinder:
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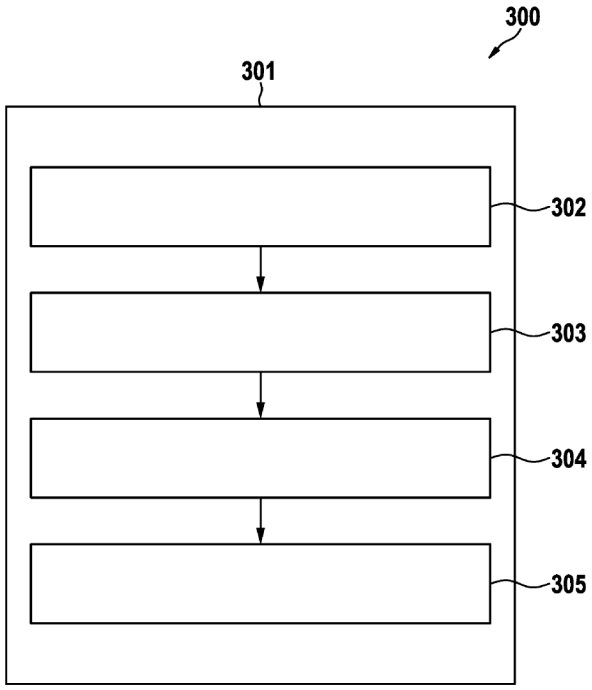
Rechercheantrag gemäß § 43 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen.

(54) Bezeichnung: **Verfahren zum Trainieren einer Steuerungsstrategie für ein technisches System**

(57) Zusammenfassung: Gemäß verschiedenen Ausführungsformen wird ein Verfahren zum Trainieren einer Steuerungsstrategie für ein technisches System bereitgestellt, aufweisend Steuern des technischen Systems und Ermitteln einer Folge von Zuständen des technischen Systems, die bei der Steuerung des technischen Systems auftreten, Schätzen der Übergangsdynamik zwischen aufeinanderfolgenden Zuständen der Folge von Zuständen, Detektieren von Änderungen der Übergangsdynamik im Laufe der Folge von Zuständen anhand der Schätzungen der Übergangsdynamik und, in Reaktion auf die Detektion einer Änderung der Übergangsdynamik von einer ersten Übergangsdynamik zu einer zweiten Übergangsdynamik, Wechseln der Entscheidungsregel, gemäß der das technische System gesteuert wird und die anhand der Folge von Zuständen trainiert wird, von einer ersten Entscheidungsregel, die der ersten Übergangsdynamik zugeordnet ist, zu einer zweiten Entscheidungsregel, die der zweiten Übergangsdynamik zugeordnet ist.



US 20240416506A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0416506 A1**

(43) **Pub. Date: Dec. 19, 2024**

Wu et al.

(54) **REMOTELY ACTUATED ROTARY ACTUATOR WITH TORQUE MULTIPLICATION**

(71) Applicant: **CONTORO INC.**, Austin, TX (US)

(72) Inventors: **William Wu**, Austin, TX (US); **Michael Normand**, Austin, TX (US); **Daniel Nguyen**, League City, TX (US); **Youngmok Yun**, Austin, TX (US); **Rohit John Varghese**, Austin, TX (US)

(21) Appl. No.: **18/740,840**

(22) Filed: **Jun. 12, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/508,556, filed on Jun. 16, 2023.

Publication Classification

(51) **Int. Cl.**

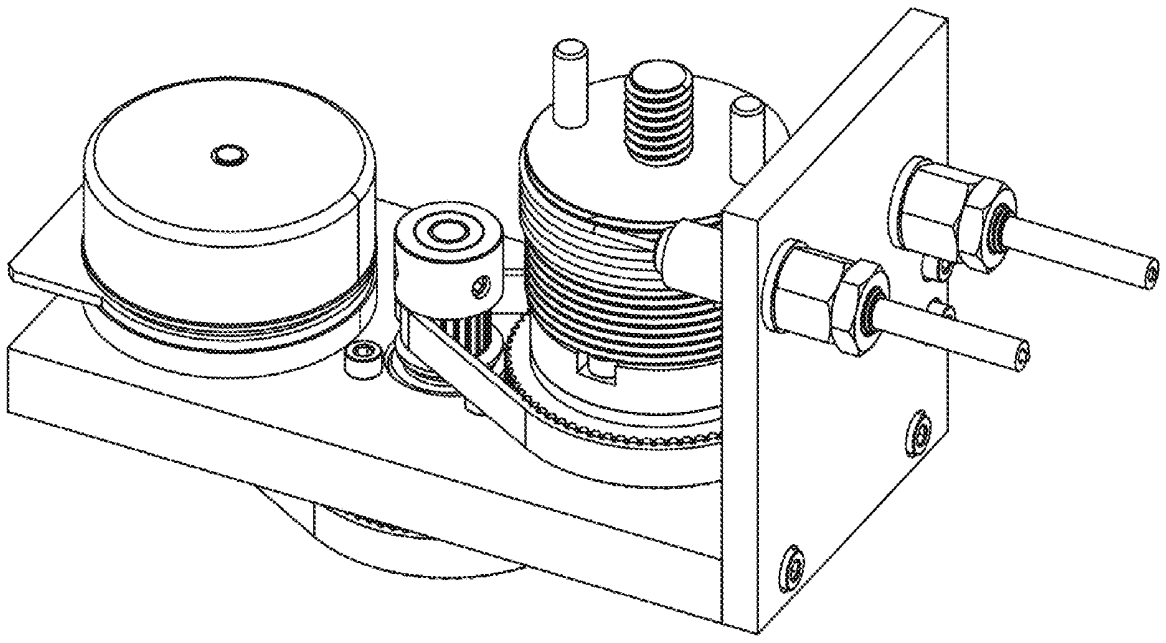
B25J 9/10	(2006.01)
B25J 19/02	(2006.01)
F16C 1/18	(2006.01)

(52) **U.S. Cl.**

CPC ***B25J 9/1045*** (2013.01); ***B25J 19/02*** (2013.01); ***F16C 1/18*** (2013.01)

(57) **ABSTRACT**

Embodiments include a component of a lightweight and low-cost robotic exoskeletons for teleoperation applications.



US 20240418099A1

(19) **United States**

(12) **Patent Application Publication**

Ried et al.

(10) **Pub. No.: US 2024/0418099 A1**

(43) **Pub. Date: Dec. 19, 2024**

(54) **INTEGRATED MACHINE SPEED SIGNAL WAVEFORM CAPTURE**

(71) Applicant: **Woodward, Inc.**, Fort Collins, CO (US)

(72) Inventors: **David L. Ried**, Severance, CO (US); **Steve Pacheco**, Fort Collins, CO (US); **Bryan W. Guild**, Fort Collins, CO (US); **Dave Rubenthaler**, Fort Collins, CO (US)

(21) Appl. No.: **18/336,717**

(22) Filed: **Jun. 16, 2023**

Publication Classification

(51) **Int. Cl.**

F01D 17/06 (2006.01)

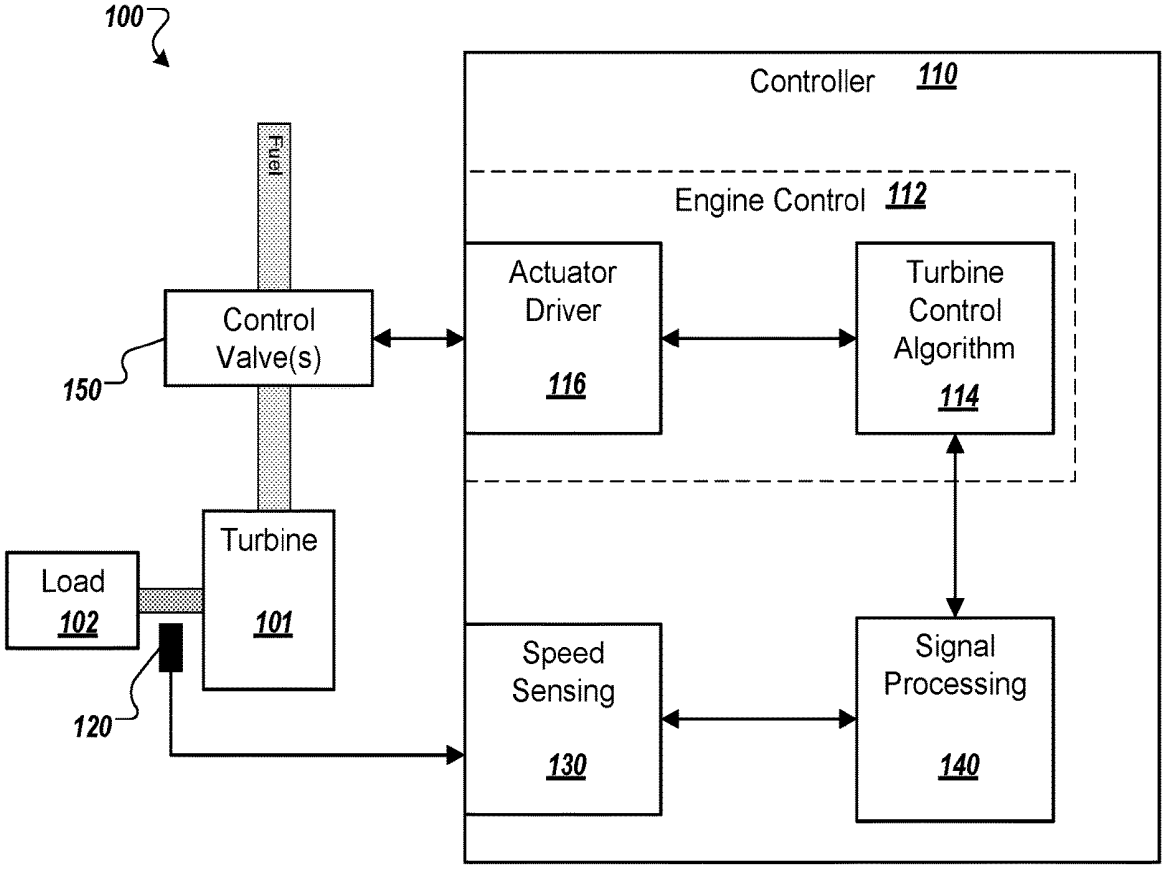
F02C 9/00 (2006.01)

(52) **U.S. Cl.**

CPC ***F01D 17/06*** (2013.01); ***F02C 9/00*** (2013.01); ***G01P 3/489*** (2013.01)

(57) **ABSTRACT**

The subject matter of this specification can be embodied in, among other things, a method for controlling a turbine engine that includes measuring, by a speed sensor, waveforms indicative of a speed of a rotating machine. Receiving the waveforms from the speed sensor and providing data representing the waveforms to a first signal path and to a second signal path, wherein the second signal path is isolated from the first signal path such that data communications at the second signal path do not interfere with communications on the first signal path. Controlling, responsive to the data received along the first signal path, one or more operations of the rotating machine. Storing, the data received along the second signal path, individual samples of the data in association with a respective timestamp indicating a time that the data was received.



US 20240416525A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0416525 A1

FANG et al. (43) Pub. Date: Dec. 19, 2024

(54) METHOD FOR CONTROLLING MULTI-ROBOT COLLABORATING INTELLIGENT DRILLING AND RIVETING SYSTEM FOR SHELTER

(71) Applicant: **THE 28TH RESEARCH INSTITUTE OF CHINA ELECTRONICS TECHNOLOGY GROUP CORPORATION**, Jiangsu (CN)

(72) Inventors: **Lei FANG**, Jiangsu (CN); **Qinglong YANG**, Jiangsu (CN); **Junlin WAN**, Jiangsu (CN); **Guodong WANG**, Jiangsu (CN); **Zili XU**, Jiangsu (CN); **Yang TIAN**, Jiangsu (CN); **Qi ZHANG**, Jiangsu (CN); **Siwei FANG**, Jiangsu (CN)

(73) Assignee: **THE 28TH RESEARCH INSTITUTE OF CHINA ELECTRONICS TECHNOLOGY GROUP CORPORATION**, Jiangsu (CN)

(21) Appl. No.: **18/644,050**

(22) Filed: **Apr. 23, 2024**

Related U.S. Application Data

(63) Continuation of application No. PCT/CN2023/131205, filed on Nov. 13, 2023.

(30) **Foreign Application Priority Data**

Jun. 14, 2023 (CN) 202310699731.9

Publication Classification

(51) **Int. Cl.**

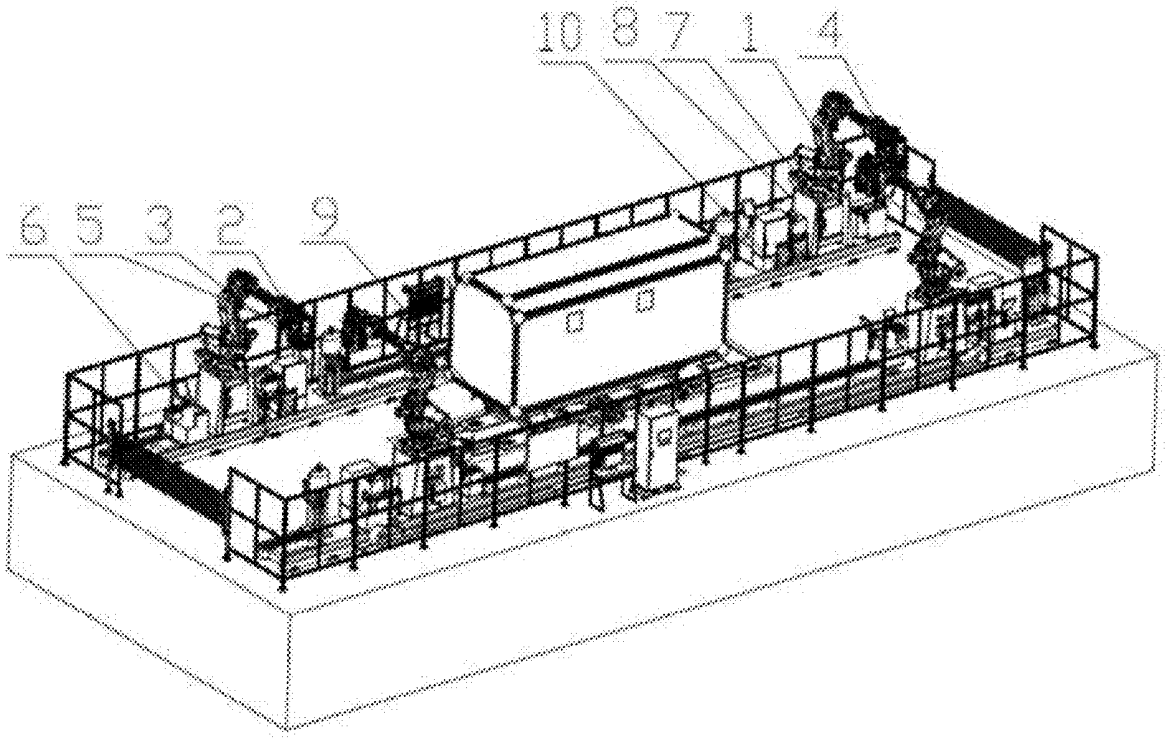
B25J 11/00 (2006.01)
B25J 9/16 (2006.01)
B25J 19/02 (2006.01)

(52) **U.S. Cl.**

CPC ***B25J 11/007*** (2013.01); ***B25J 9/1661*** (2013.01); ***B25J 19/022*** (2013.01)

(57) **ABSTRACT**

The present invention discloses a method for controlling a multi-robot collaborating intelligent drilling and riveting system for a shelter, including the following steps: generating a robot scanning trace according to a key characteristic parameter of the shelter; performing laser scanning on an angle aluminum edge to acquire a drilling position of the shelter; establishing a task allocation mechanism, establishing a drilling and riveting task propensity model according to the task allocation mechanism, and allocating automatic drilling and riveting tasks to multiple robots based on the drilling and riveting task propensity model; and establishing a drilling angle compensation value model, where automatic drilling and riveting robots perform position compensation based on the drilling angle compensation value model to complete drilling and riveting.



US 20240420062A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0420062 A1

Limon et al. (43) Pub. Date: Dec. 19, 2024

(54) METHOD FOR EVALUATING ELECTRONIC DOCUMENTS

(71) Applicant: **FMR LLC**, Boston, MA (US)

(72) Inventors: **Ali Limon**, Hopkinton, MA (US); **Vineel Gujjar**, Cumberland, RI (US); **Lisa Huang**, Boston, MA (US)

(21) Appl. No.: **18/210,859**

(22) Filed: **Jun. 16, 2023**

Publication Classification

(51) **Int. Cl.**

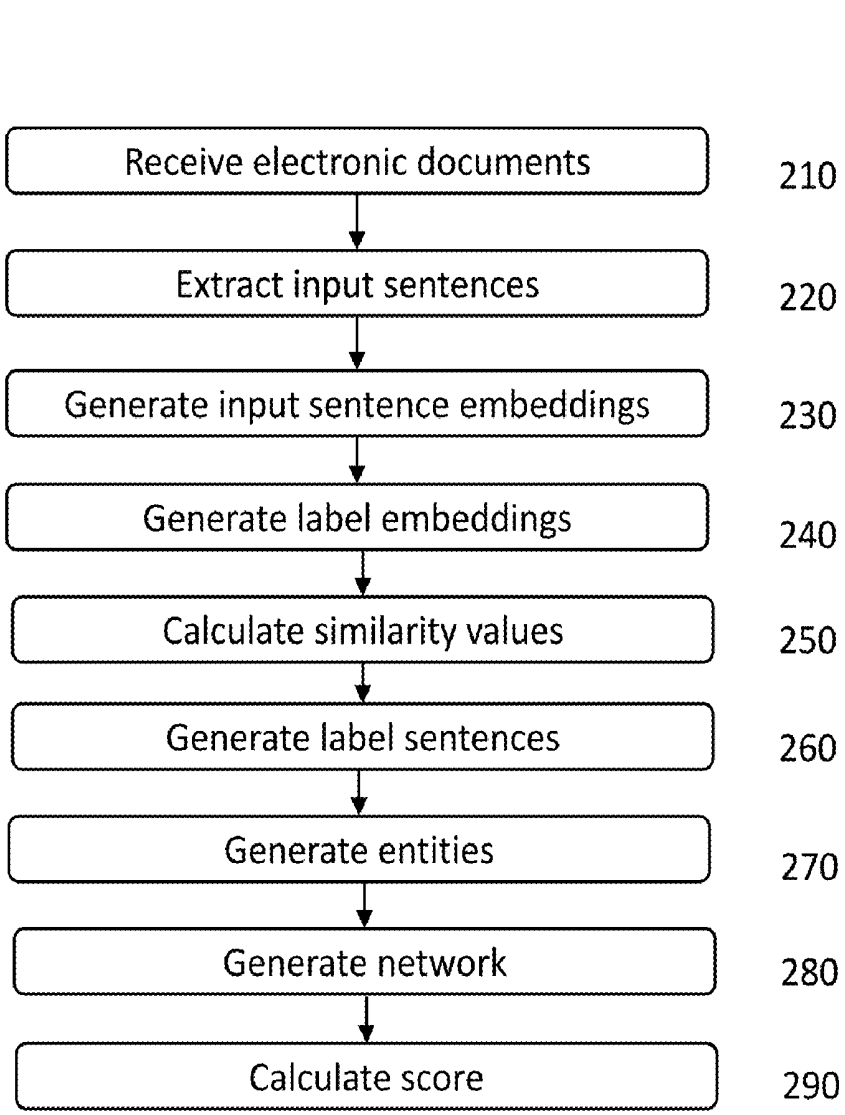
G06Q 10/0639	(2006.01)
G06F 40/205	(2006.01)
G06F 40/295	(2006.01)
G06V 30/19	(2006.01)
G06V 30/412	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/06393*** (2013.01); ***G06F 40/205*** (2020.01); ***G06F 40/295*** (2020.01); ***G06V 30/19093*** (2022.01); ***G06V 30/412*** (2022.01)

(57) **ABSTRACT**

A method for evaluating electronic documents based on a framework having a plurality of labels includes receiving a plurality of electronic documents, each electronic document having a company identifier. The method includes extracting a plurality of input sentences from each electronic document. The method includes generating a plurality of input sentence embeddings, each input sentence embedding corresponding to one of the input sentences. The method includes generating a plurality of label embeddings, each label embedding corresponding to one of the labels. The method includes calculating a plurality of similarity measures between each of the input sentence embeddings and each of the label embeddings. The method includes generating a plurality of label sentences for each of the labels based on the similarity measures, each of the label sentences being associated with one of the company identifiers. The method includes generating a plurality of entities for each of the label sentences.



US 20240420093A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0420093 A1**

Aghadavoodi Jolfaei et al. (43) **Pub. Date: Dec. 19, 2024**

(54) **CONTEXTUAL DATA AUGMENTATION FOR SOFTWARE ISSUE PRIORITIZATION**

(71) Applicant: **SAP SE**, Walldorf (DE)

(72) Inventors: **Masoud Aghadavoodi Jolfaei**, Wiesloch (DE); **Frank Brunswig**, Heidelberg (DE)

(21) Appl. No.: **18/211,452**

(22) Filed: **Jun. 19, 2023**

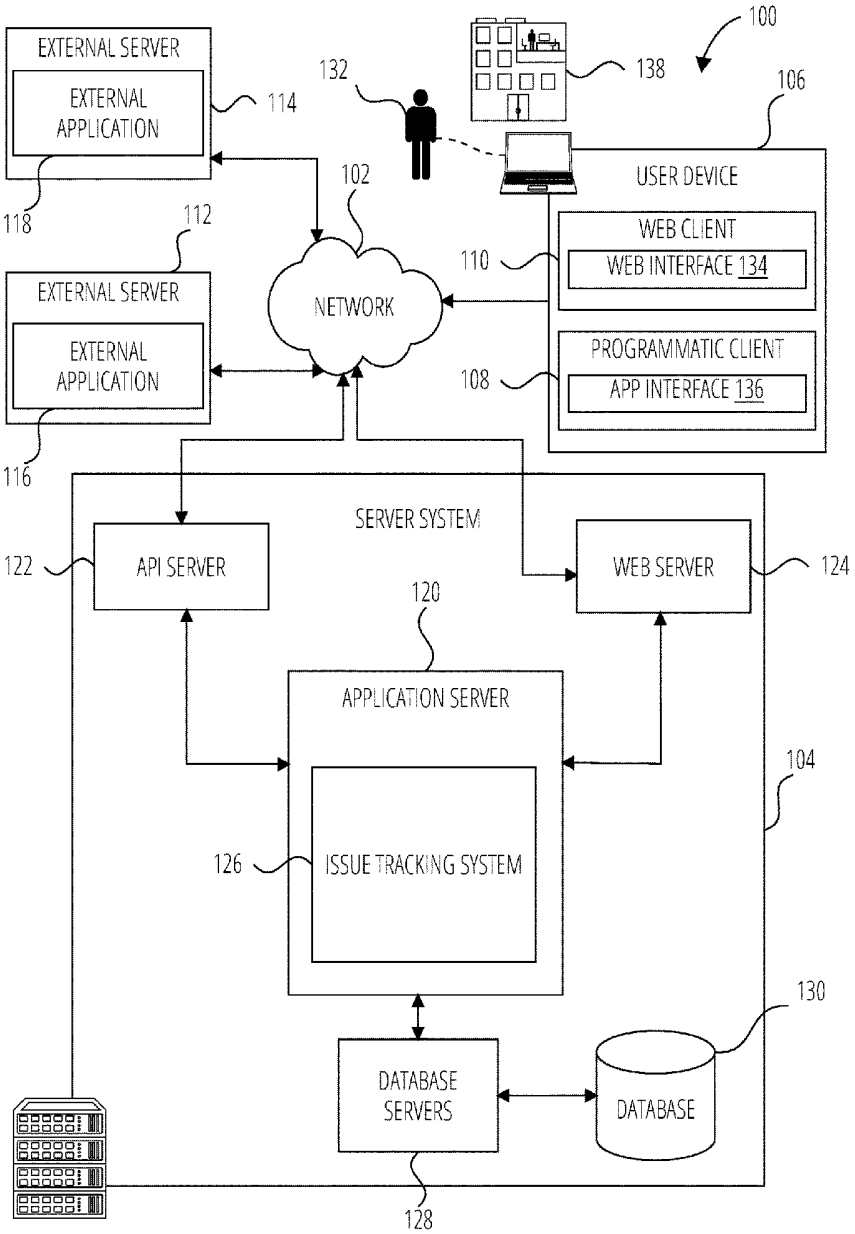
Publication Classification

(51) **Int. Cl.**
G06Q 10/20 (2006.01)
G06Q 10/0637 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/20*** (2013.01); ***G06Q 10/06375*** (2013.01)

(57) **ABSTRACT**

Systems and methods described herein relate to techniques for identifying and using context data to prioritize reported issues in a software context. A data record of a reported issue is accessed. The reported issue is associated with a software offering provided to a user. The data record comprises issue metadata that includes a first priority rating for the reported issue. The issue metadata is used to identify a relation between the reported issue and context data associated with the user. A second priority rating for the reported issue is generated based on at least the context data. The second priority rating may differ from the first priority rating. The second priority rating is presented at a computing device, optionally together with the first priority rating via a graphical user interface.



US 20240419803A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0419803 A1**

(43) **Pub. Date: Dec. 19, 2024**

BLUM et al.

(54) **TREE-BASED SECURITY ANALYSIS AND THREAT HUNTING AIDED BY LARGE LANGUAGE MODELS**

(71) Applicant: **Microsoft Technology Licensing, LLC**, Redmond, WA (US)

(72) Inventors: **William BLUM**, Bellevue, WA (US); **Martin Jean FONTAINE**, Gatineau (CA); **Sébastien Martin DIOTTE**, Gatineau (CA)

(21) Appl. No.: **18/210,016**

(22) Filed: **Jun. 14, 2023**

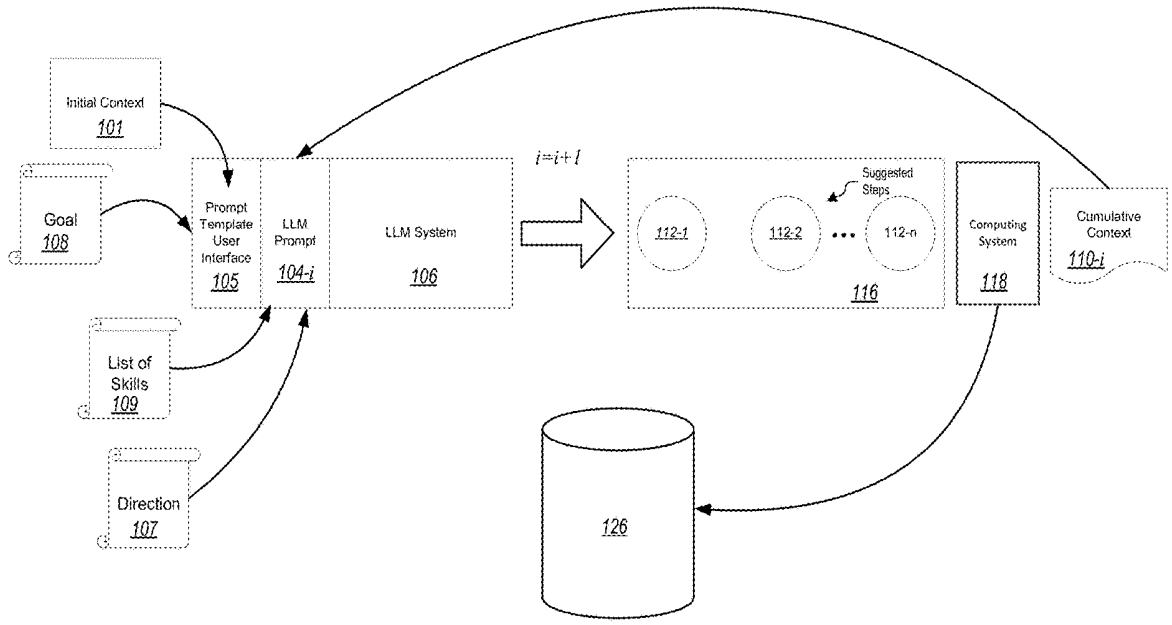
Publication Classification

(51) **Int. Cl.**
G06F 21/57 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 21/577*** (2013.01)

(57) **ABSTRACT**

A computing system assists in large language model system assisted investigations. The computing system includes network connection hardware configured to connect to a large language model and configured provide to investigation context and investigation goals to the large language model system. The network connection receives from the large language model system, an indication of suggested steps to perform in an investigation, including specific computer executable code to perform a skill in the first step, the skill comprising a supplemental access, analytic or enrichment function. The computing system includes a user interface with a tree interface that causes display of the indication of the suggested steps in a tree format. The computing system is configured to execute the computer executable code to cause the computer system to perform the supplemental access, analytic or enrichment function.



US 20240422262A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0422262 A1

Stoops et al. (43) Pub. Date: Dec. 19, 2024

(54) TECHNOLOGIES FOR CONTACT CENTER AGENT INCENTIVIZATION VIA AUTOMATED GAMIFICATION

(71) Applicant: **Genesys Cloud Services, Inc.**, Menlo Park, CA (US)

(72) Inventors: **Dan Stoops**, Menlo Park, CA (US); **Merijn te Booij**, Menlo Park, CA (US); **Cliff Bell**, Menlo Park, CA (US)

(21) Appl. No.: **18/337,012**

(22) Filed: **Jun. 18, 2023**

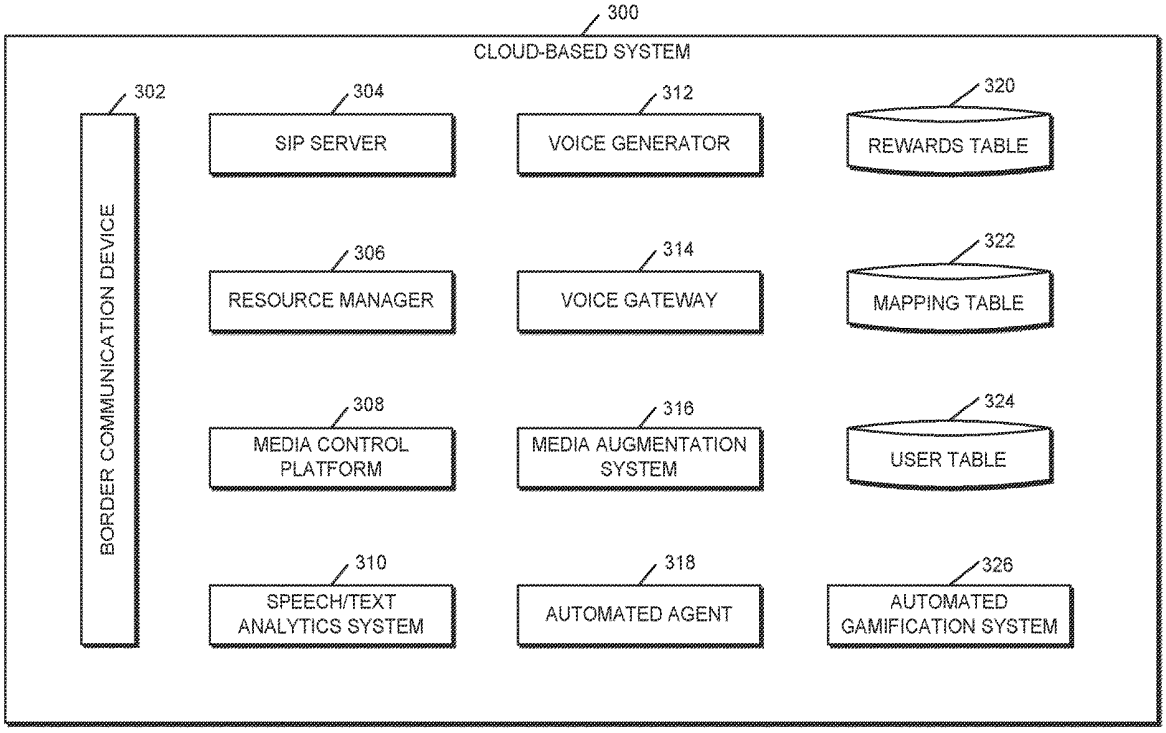
Publication Classification

(51) **Int. Cl.**
H04M 3/51 (2006.01)

(52) **U.S. Cl.**
CPC *H04M 3/5175* (2013.01); *G06Q 10/06398* (2013.01)

(57) **ABSTRACT**

A method for contact center agent incentivization via automated gamification according to an embodiment includes transferring an interaction between a contact center agent and a user to an automated agent, prompting, by the automated agent, the user to reward the contact center agent based on the interaction between the user and the contact center agent, receiving a selection of a reward option made by the user in response to prompting the user to reward the contact center agent, determining a point value associated with the user's selected reward option based on a mapping table, and associating the user's selected reward option with the contact center agent in an agent rewards table.



US 20240420026A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0420026 A1**

(43) **Pub. Date: Dec. 19, 2024**

BREEDING-ALLISON et al.

(54) **SYSTEMS AND METHODS FOR ADVANCED PREDICTION USING MACHINE-LEARNING AND STATISTICAL MODELS**

(71) Applicant: **Mars, Incorporated**, McLean, VA (US)

(72) Inventors: **Jeff BREEDING-ALLISON**, North Middletown, NJ (US); **Kylie TAYLOR**, Nashville, TN (US); **Paul LEDWITH**, Lower Stondon (GB)

(21) Appl. No.: **18/742,501**

(22) Filed: **Jun. 13, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/508,247, filed on Jun. 14, 2023.

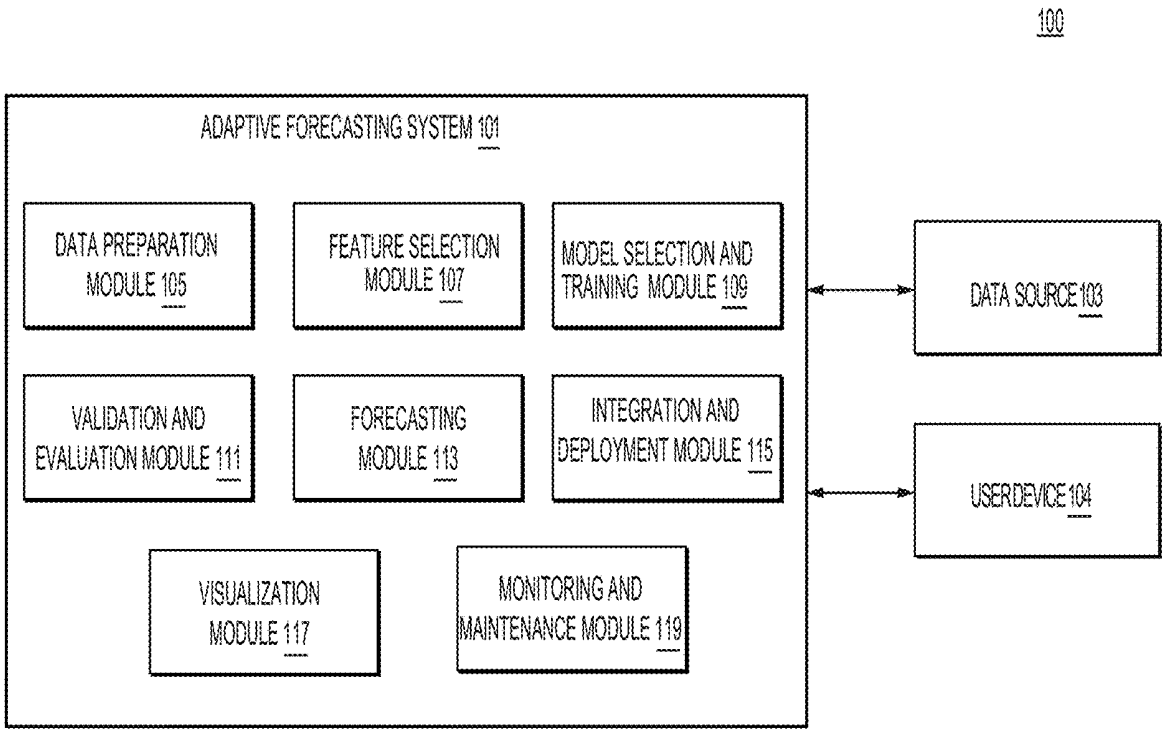
Publication Classification

(51) **Int. Cl.**
G06N 20/00 (2006.01)

(52) **U.S. Cl.**
CPC ***G06N 20/00*** (2019.01)

(57) **ABSTRACT**

Systems and methods are disclosed for implementing advanced statistical models and machine-learning algorithms to generate predictions. The method includes receiving a plurality of data from one or more sources; processing the plurality of data to select one or more relevant variables; training one or more prediction models based on the one or more relevant variables, and a combination of an advanced statistical model and a machine-learning model; evaluating performance of the one or more trained prediction models based on one or more validation techniques; and deploying at least one prediction model based on the performance for generating predictions.



US 20240417169A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0417169 A1**

(43) **Pub. Date: Dec. 19, 2024**

CHANG et al.

(54) **SYSTEM AND METHOD FOR PUBLIC AND PRIVATE WAREHOUSES MANAGEMENT WITH AUTOMATED EQUIPMENT**

(71) Applicant: **ALLY LOGISTIC PROPERTY CO., LTD.**, Taipei City (TW)

(72) Inventors: **CHIEN-TAI CHANG**, Taipei City (TW); **PEI-CHIA LIU**, Taipei City (TW); **MENG-HARN LIN**, Taipei City (TW); **KAI-LUN LIN**, Taipei City (TW); **YU-CHEN KUO**, Taipei City (TW)

(21) Appl. No.: **18/738,332**

(22) Filed: **Jun. 10, 2024**

(30) **Foreign Application Priority Data**

Jun. 13, 2023 (TW) 112122063

Publication Classification

(51) **Int. Cl.**

B65G 1/04 (2006.01)

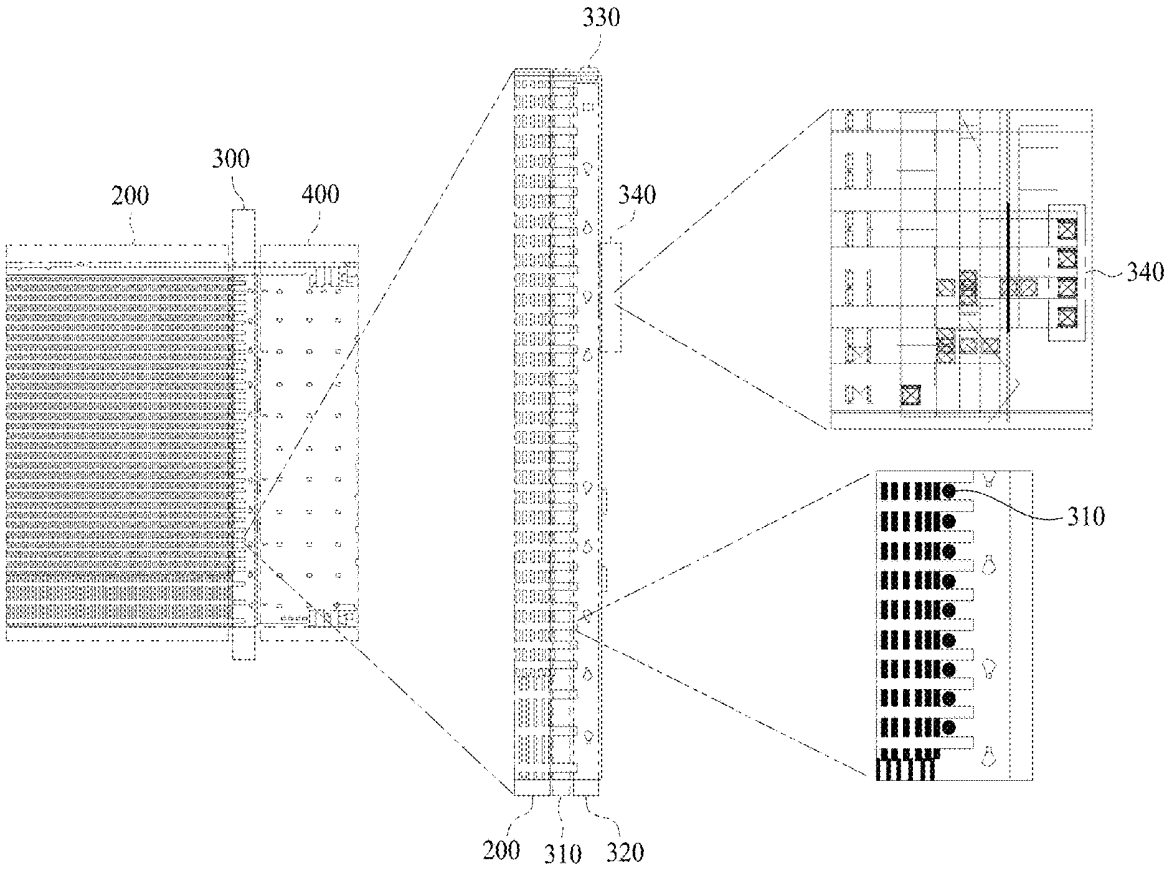
G06Q 10/08 (2006.01)

(52) **U.S. Cl.**

CPC ***B65G 1/0485*** (2013.01); ***G06Q 10/08*** (2013.01); *B65G 1/0492* (2013.01); *B65G 2203/0241* (2013.01); *B65G 2203/0258* (2013.01)

(57) **ABSTRACT**

A system for public and private warehouses management with automated equipment includes a public warehouse having multiple floors and an outer perimeter; an automated guided vehicle operation area located in the outer perimeter of the public warehouse; a transfer station space located out of each side of the public warehouse; an automated guided vehicle space adjacent to one side of the transfer station space away from the public warehouse; a maintenance station space arranged at a predetermined location adjacent to the automated guided vehicle space; an inbound/outbound space adjacent to one side of the automated guided vehicle space away from the public warehouse; and two private warehouses connected with the inbound/outbound space. Each of the private warehouses has multiple floors corresponding to the floors of the public warehouse.



(19) RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE

COURBEVOIE

(11) **N° de publication :** ***3 150 001***

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(21) **N° d'enregistrement national :** **24 05990**

(51) Int Cl[8] : ***G 05 B 19/12*** *(2024.01), B 25 J 9/00, G 06 N 3/02*

(12) DEMANDE DE BREVET D'INVENTION A1

(22) **Date de dépôt :** 06.06.24.

(30) **Priorité :** 13.06.23 FR 2306029.

(43) **Date de mise à la disposition du public de la demande :** 20.12.24 Bulletin 24/51.

(56) **Liste des documents cités dans le rapport de recherche préliminaire :** *Ce dernier n'a pas été établi à la date de publication de la demande.*

(60) **Références à d'autres documents nationaux apparentés :**

( ) **Demande(s) d'extension :**

(71) **Demandeur(s) :** *ENCHANTED TOOLS SAS, société par actions simplifiée* — FR.

(72) **Inventeur(s) :** MONCEAUX Jérôme.

(73) **Titulaire(s) :** ENCHANTED TOOLS SAS, société par actions simplifiée.

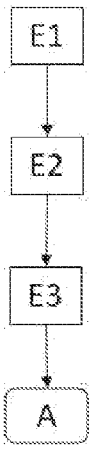
(74) **Mandataire(s) :** ARGYMA.

(54) Procédé de programmation comportementale de robot dans une architecture de réseau robotique.

(57) L'invention concerne un procédé de programmation comportementale d'un robot (2) appartenant à une architecture de réseau robotique (1), à partir d'étiquettes électroniques (3), l'architecture de réseau robotique (1) comprenant au moins un robot (2) et au moins un élément (4), les étiquettes électroniques (3) appartenant à un type parmi les types identification et action, le type identification comprenant des sous-types, notamment localisation, objet et personne, le procédé comprenant :

l'association (E1) d'une étiquette électronique (3) de type identification à un élément (4) du réseau robotique (1) ;le couplage (E2) d'une étiquette électronique (3) de type identification à une étiquette électronique (3) de type action ;l'activation (E3) d'une étiquette électronique (3) pour engendrer la réalisation d'une action (A) de la part du robot (2) vis-à-vis de l'élément (4) associé à ladite étiquette électronique (3) de type identification.

Figure de l'abrégé : Figure 1



FR 3 150 001 - A1

US 20240420076A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0420076 A1

NAKANISHI et al. (43) Pub. Date: Dec. 19, 2024

(54) DELIVERY ASSISTANCE DEVICE

(71) Applicant: **TOYOTA JIDOSHA KABUSHIKI KAISHA**, Aichi-ken (JP)

(72) Inventors: **Yohei NAKANISHI**, Nagoya-shi (JP); **Toshiharu FUKUMURA**, Nagakute-shi (JP); **Adrian NICOL**, Nagoya-shi (JP); **Ryuichi DANNO**, Kasugai-shi (JP); **Toshinori KIMURA**, Ichinomiya-shi (JP); **Yoshiaki ABE**, Kofu-shi (JP)

(21) Appl. No.: **18/740,517**

(22) Filed: **Jun. 12, 2024**

(30) **Foreign Application Priority Data**

Jun. 16, 2023 (JP) 2023-099306

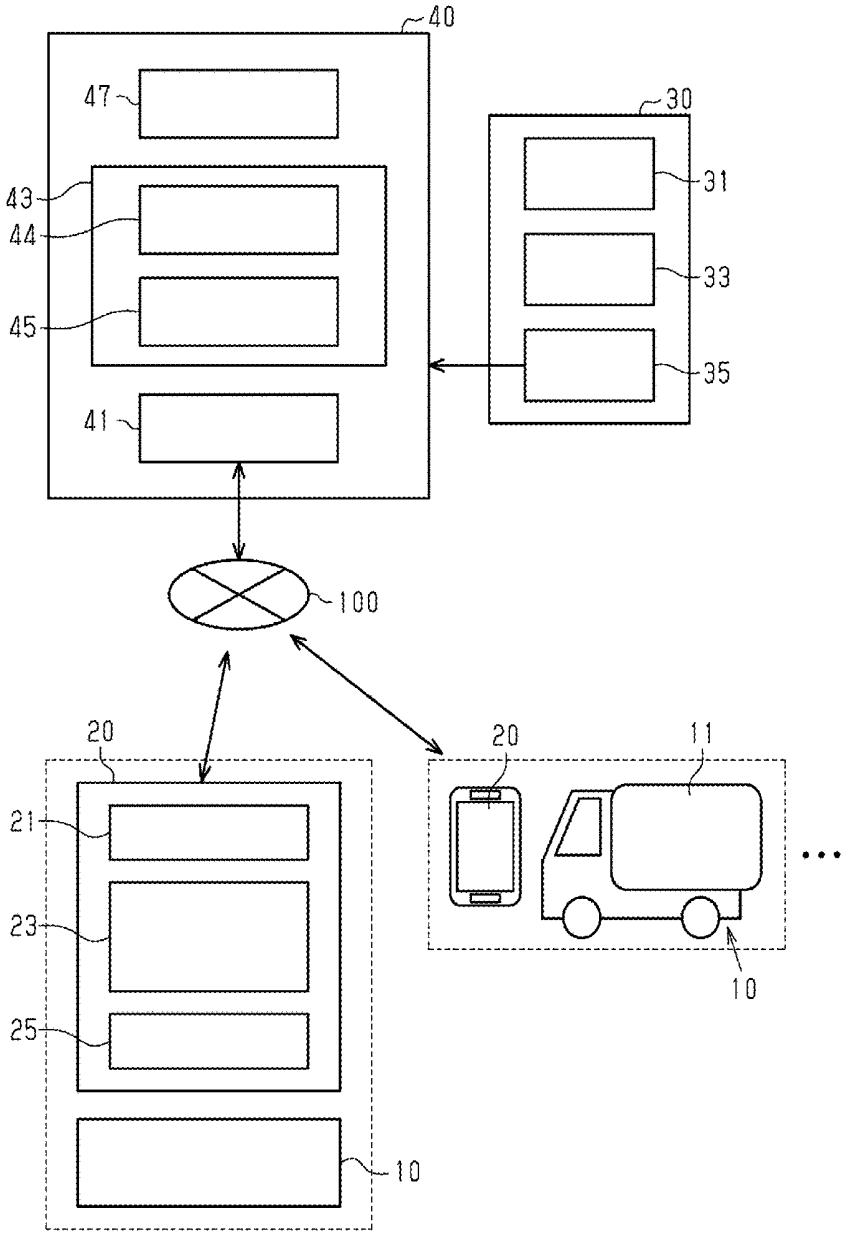
Publication Classification

(51) **Int. Cl.**
G06Q 10/0835 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/08355*** (2013.01)

(57) **ABSTRACT**

A delivery assistance device includes controller that creates a parcel delivery route of a delivery vehicle loaded with multiple parcels. The controller obtains position information of the multiple parcels in the delivery vehicle. The controller creates the delivery route based on the position information of the multiple parcels such that a parcel at a position where the parcel is easily unloaded from the delivery vehicle can be delivered to a delivery destination earlier than a parcel at a position where the parcel is not easily unloaded from the delivery vehicle.



US 20240420536A1

(19) **United States**

(12) **Patent Application Publication**

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WISE

(54) **SYSTEMS AND METHODS FOR SUPPLYING ENERGY TO AN AUTONOMOUS VEHICLE VIA A VIRTUAL INTERFACE**

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(21) Appl. No.: **18/335,251**

(22) Filed: **Jun. 15, 2023**

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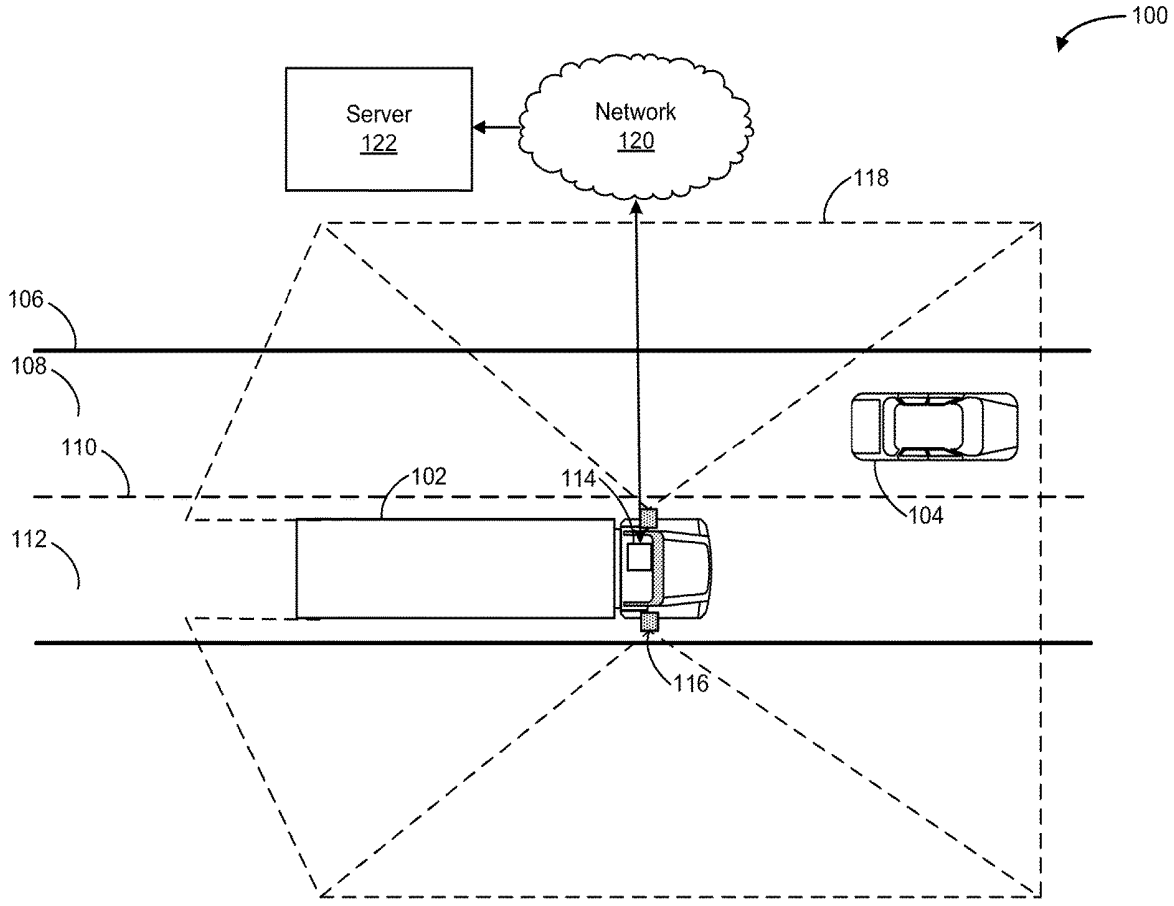
B25J 9/16	(2006.01)
B60L 53/37	(2006.01)

(52) **U.S. Cl.**

CPC ***G07F 15/00*** (2013.01); ***B25J 9/1697*** (2013.01); ***B60L 53/37*** (2019.02)

(57) **ABSTRACT**

An energy supply station can include a mechanical arm, an energy delivery receptacle, and one or more processors. The processors can be configured to detect an arrival of a vehicle at the energy supply station; transmit an indication of the arrival to a remote computer, causing activation of a virtual interface; and move the mechanical arm, based on input at the virtual interface, to cause the energy delivery receptacle to contact or couple with an energy input receptacle of the vehicle.



(19) Deutsches Patent- und Markenamt

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(12) # Offenlegungsschrift

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(43) Offenlegungstag: **19.12.2024**

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B23Q 35/128 (2006.01)
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B23C 3/35 (2006.01)
E05B 19/00 (2006.01)
G06V 20/60 (2022.01)
G05B 19/4099 (2006.01)

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(74) Vertreter:
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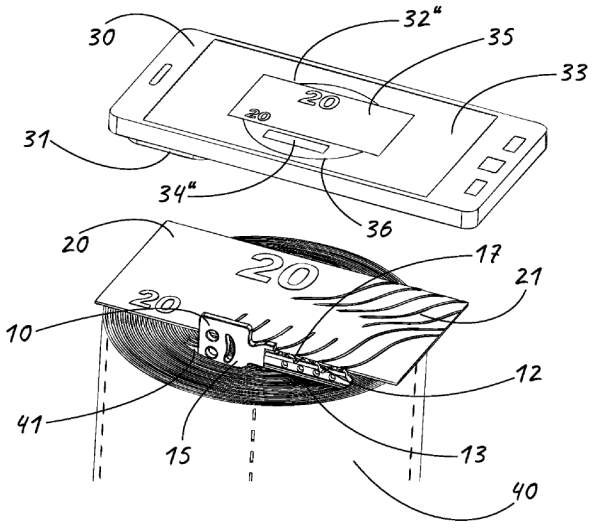
(72) Erfinder:
Erfinder gleich Anmelder

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen.

(54) Bezeichnung: **Verfahren zur Aufnahme der Oberfläche eines Schlüssels**

(57) Zusammenfassung: Bei einem Verfahren zur Aufnahme der Oberfläche eines Schlüssels (10), sollen die folgenden Schritte:
- Abspielen von Anleitungs-Videosequenzen auf dem Display (33) eines Aufnahmegerätes (30)
- Anzeigen von Positionierungsgrafiken (32, 32'', 32''', 32'''') auf dem Display (33) des Aufnahmegerätes (30)
- Ausrichten des Schlüssels (10), des Referenzhilfsobjektes (20), des Fixierhilfsobjektes (40, 42), des Schließzylinders (25), des Aufnahmegerätes (30)
- Aufnahme der Oberfläche des Schlüssels (10), des Referenzhilfsobjektes (20), des Fixierhilfsobjektes (40, 42), des Schließzylinders (25) durch die Kamera (31) des Aufnahmegerätes (30) ausgeführt werden.



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(19) United States

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(43) Pub. Date: Dec. 19, 2024

Jagasia et al.

(54) **FRAMEWORK FOR EVALUATION OF COMPUTER-BASED MODELS**

(71) Applicant: **Palantir Technologies Inc.**, Denver, CO (US)

(72) Inventors: **Arnav Jagasia**, New York, NY (US); **Megha Arora**, London (GB); **Sophie Scannell**, London (GB); **Emily Su**, New York, NY (US); **Meghan Nayan**, Seattle, WA (US); **Angela McNeal**, New York, NY (US); **David Lisuk**, Brooklyn, NY (US); **Jim Inoue**, Kirkland, WA (US); **Justin Ngai**, New York, NY (US)

(21) Appl. No.: **18/349,738**

(22) Filed: **Jul. 10, 2023**

Related U.S. Application Data

(60) Provisional application No. 63/508,211, filed on Jun. 14, 2023.

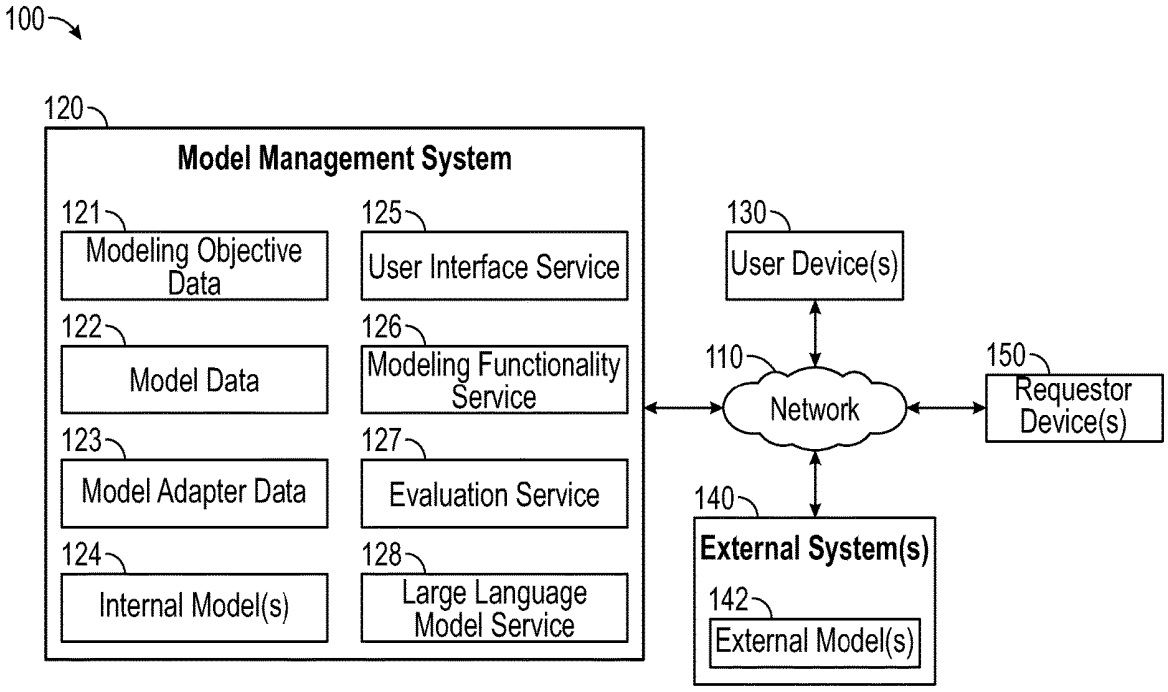
Publication Classification

(51) **Int. Cl.**
G06Q 50/16 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 50/16*** (2013.01)

(57) **ABSTRACT**

Computer-implemented systems and methods are disclosed, including for evaluation of computer-based models in a management framework. A computer-implemented method may include, for example, receiving one or more inputs including requesting to add an evaluation configuration to a defined modeling objective, specifying at least a first evaluation data set for the evaluation configuration, specifying at least a first evaluation library for the evaluation configuration, and specifying at least a first subset definition for the evaluation configuration. A computer-implemented method may in response to the one or more user inputs include: creating, storing, and/or updating the evaluation configuration. A computer-implemented method may include evaluating, based on the evaluation configuration, the one or more models associated with the defined modeling objective.



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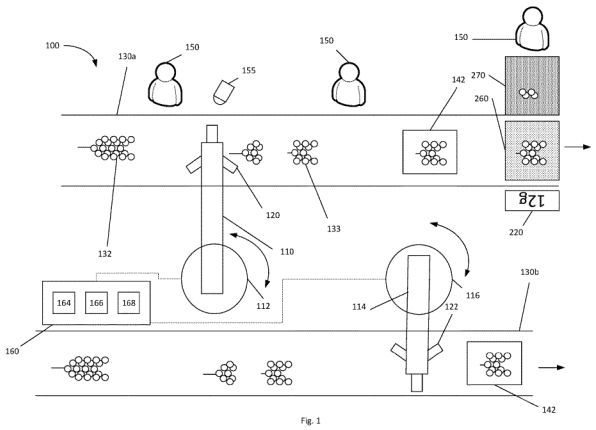
B25J 9/00 (2006.01) ***B25J 9/16*** (2006.01)
B25J 13/08 (2006.01) ***B25J 19/02*** (2006.01)
B65B 5/06 (2006.01) ***B65B 5/10*** (2006.01)
B65B 25/04 (2006.01)

(56) Documents Cited:
GB 2600504 A

(58) Field of Search:
INT CL **B07C, B25J, B65B**

(54) Title of the Invention: **System and method for sorting and/or packing items**
Abstract Title: **System and method for sorting and/or packing items**

(57) A robot-assisted method of sorting and/or packing vine fruit into containers 142 by a hybrid robotic and human system comprises placing vine fruit 133 onto a computer-controlled conveyor 130a, 130b, inspecting the vine fruit 133 for defects, removing any fruit identified as having a defect from the conveyor130a, 130b, weighing the vine fruit, in the event that the weight of the vine fruit 133 is above a selected threshold, cutting the vine fruit using a robotic end effector 120 mounted on a robotic arm 110 to produce a cut vine having an estimated weight below the selected threshold, placing the cut vine into a container 142, checking the weight of the container 142 holding the cut vine, determining whether the weight of the container 142 holding the cut vine is within a selected threshold weight range, and in the event that the determined weight is outside the selected threshold weight range, topping up the container with vine fruit to reach the selected threshold weight range. Placing the cut vine into a container 142 may comprise using a robotic end effector 122 mounted on a robotic arm 114. Weighing the vine fruit 133 may comprise making a determination based upon received image data of the vine fruit 133. Inspecting the vine fruit 133 for defects may comprise applying a trained machine learning model to received image data of the vine fruit 133. Determining whether the weight of the container 142 holding the cut vine is within a selected threshold weight range may comprise passing the container 142 over an in-line weight scale 260.



GB 2630978 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

(19) Europäisches Patentamt
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(11) EP 4 478 267 A1

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18.12.2024 Bulletin 2024/51

(21) Application number: **24180063.0**

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(51) International Patent Classification (IPC):
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G06Q 10/0833 *(2023.01)* ***G06Q 10/0836*** *(2023.01)*
G06Q 10/083 *(2024.01)* ***G07F 17/12*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
G06Q 10/0836; G06Q 10/04; G06Q 10/08; G06Q 10/0833; G06Q 10/0838; G07F 17/13

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Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **12.06.2023 SE 2350708**

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(54) COMPUTER-IMPLEMENTED METHOD OF FORECASTING AN OCCUPANCY OF AN ELECTRONIC PARCEL COMPARTMENT SYSTEM

(57) A computer-implemented method of forecasting an occupancy of an electronic parcel compartment system (110) is presented in this disclosure. The method includes determining a forecasted occupancy of the electronic parcel compartment system (110) by applying a prediction of pick-up of parcel(s) to predict parcel locker(s) of the electronic parcel compartment system 110 that is/are estimated to contain a parcel.

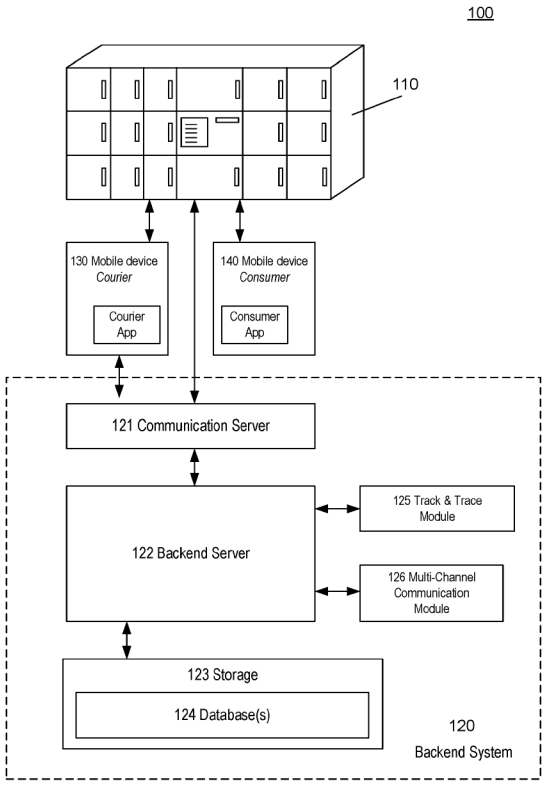

FIG. 1

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(19) United States

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ABHINAV et al. (43) Pub. Date: Dec. 19, 2024

(54) GENERATING ROBOTIC ASSEMBLY INSTRUCTIONS FROM THREE-DIMENSIONAL COMPUTER-AIDED DESIGN MODELS

(71) Applicant: **Accenture Global Solutions Limited**, Dublin (IE)

(72) Inventors: **Kumar ABHINAV**, Hazaribag (IN); **Alpana DUBEY**, Bangalore (IN); **Shubhashis SENGUPTA**, Bangalore (IN); **Piyush Goenka**, Bangalore (IN)

(21) Appl. No.: **18/208,968**

(22) Filed: **Jun. 13, 2023**

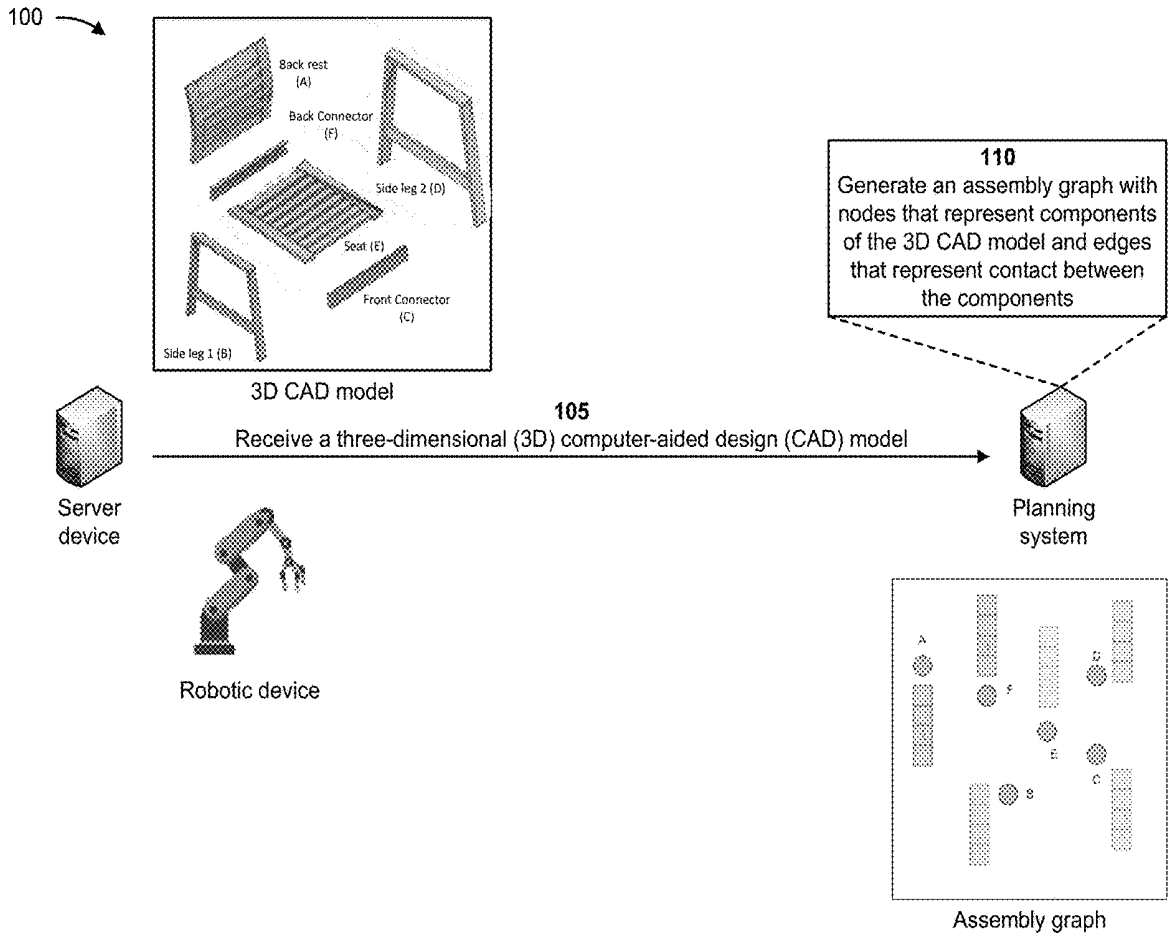
Publication Classification

(51) **Int. Cl.**
B25J 9/16 (2006.01)

(52) **U.S. Cl.**
CPC ***B25J 9/1671*** (2013.01); ***B25J 9/161*** (2013.01); ***B25J 9/163*** (2013.01); ***B25J 9/1687*** (2013.01)

(57) **ABSTRACT**

A device may receive a three-dimensional (3D) computer-aided design (CAD) model, and may generate an assembly graph with nodes that represent components and edges that represent contact between the components. The device may generate component graphs for the components, and may generate an assembly descriptor based on the assembly graph and the component graphs. The device may process the assembly descriptor, with a graph convolution network model, to generate node embeddings, and may apply pooling to the node embeddings to generate graph embeddings. The device may calculate a cross attention between the components to generate component interrelations, and may utilize the graph embeddings and the component interrelations to predict links between the components. The device may predict poses and joint axes for the components, and may generate assembly instructions based on the graph embeddings, the component interrelations, the links, the poses, and the joint axes.



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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0419154 A1**

(43) **Pub. Date: Dec. 19, 2024**

ABBASZADEH et al.

(54) **ARTIFICIAL INTELLIGENCE BASED DATA-DRIVEN INTERCONNECTED DIGITAL TWINS**

(71) Applicant: **GENERAL ELECTRIC COMPANY**, Schenectady, NY (US)

(72) Inventors: **Masoud ABBASZADEH**, Clifton Park, NY (US); **Johan Michael REIMANN**, Ballston Spa, NY (US); **Hema K ACHANTA**, Schenectady, NY (US)

(21) Appl. No.: **18/336,491**

(22) Filed: **Jun. 16, 2023**

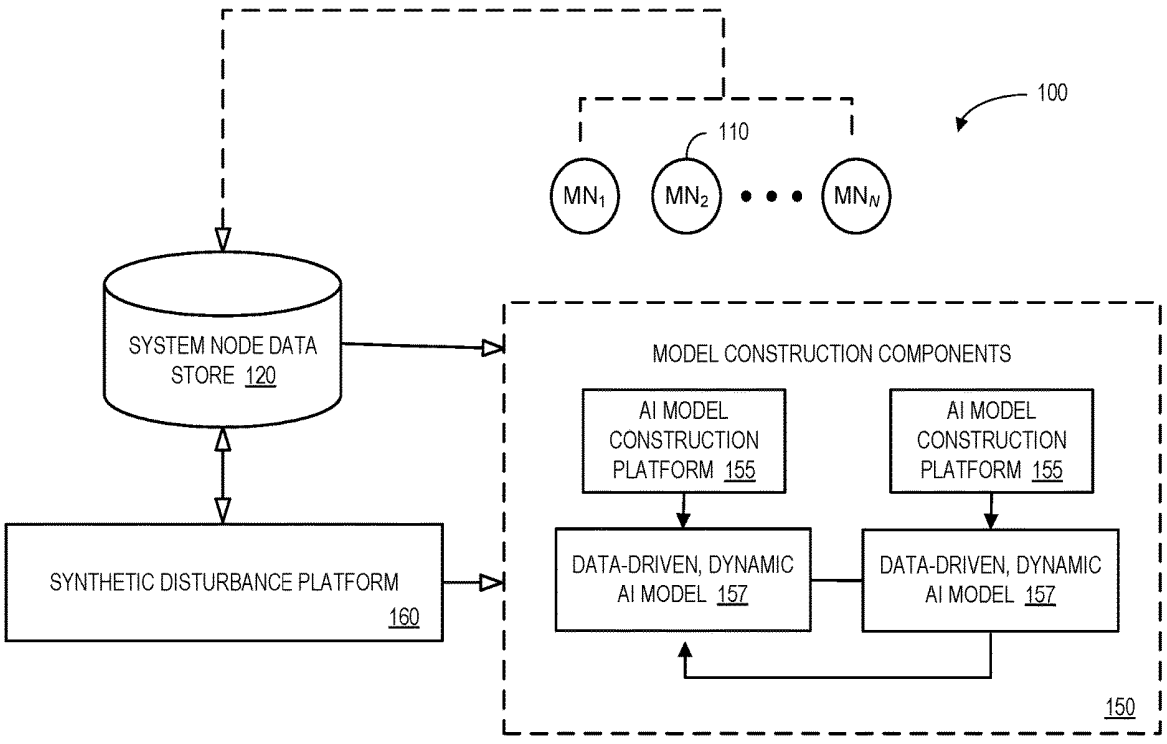
Publication Classification

(51) **Int. Cl.**
G05B 19/418 (2006.01)

(52) **U.S. Cl.**
CPC ... ***G05B 19/41885*** (2013.01); ***G05B 19/4183*** (2013.01); ***G05B 19/4184*** (2013.01)

(57) **ABSTRACT**

In some embodiments, a system node data store may contain historical system node data associated with normal operation of an industrial asset, and a plurality of artificial intelligence model construction platforms may receive historical system node data. Each platform may then automatically construct a data-driven, dynamic artificial intelligence model associated with the industrial asset based on received system node data. The plurality of artificial intelligence models are interconnected and simultaneously trained to create a digital twin of the industrial asset. A synthetic disturbance platform may inject at least one synthetic disturbance into the plurality of artificial intelligence models to create, for each of a plurality of monitoring nodes, a series of synthetic disturbance monitoring node values over time that represent simulated abnormal operation of the industrial asset.



(19) Europäisches Patentamt
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(11) EP 4 478 138 A1

(12) EUROPÄISCHE PATENTANMELDUNG

(43) Veröffentlichungstag:
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(22) Anmeldetag: **15.06.2023**

(51) Internationale Patentklassifikation (IPC):
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(52) Gemeinsame Patentklassifikation (CPC):
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Benannte Validierungsstaaten:
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Bemerkungen:
Geänderte Patentansprüche gemäss Regel 137(2) EPÜ.

(54) SICHERHEITSSYSTEM FÜR EINE MASCHINE

(57) Die Erfindung betrifft ein Sicherheitssystem (18) für eine Maschine, das zumindest einen Sensor (4) umfasst, welcher Sensordaten erzeugt. Ferner umfasst das Sicherheitssystem ein nicht-sicheres Rechenmodul (8) das dazu ausgebildet ist, zumindest eine Sicherheitsfunktion (20) basierend auf den Sensordaten durchzuführen und zumindest eine auf die Sicherheitsfunktion gerichtete Selbstdiagnosefunktion durchzuführen, sowie ein sicheres Diagnosemodul (10), das dazu ausgebildet ist, mittels eines auf dem sicheren Diagnosemodul implementierten Supervisors (16) die zumindest eine Selbstdiagnosefunktion zu überprüfen.

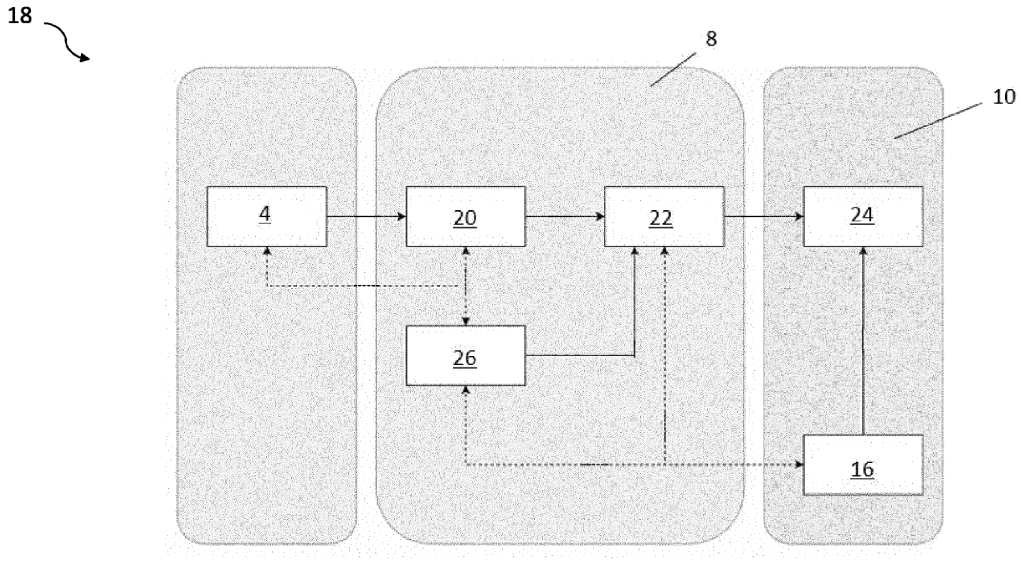

Fig. 2

EP 4 478 138 A1

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European Patent Office
Office européen des brevets

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(12) **EUROPÄISCHE PATENTANMELDUNG**

(43) Veröffentlichungstag:
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(22) Anmeldetag: **11.09.2023**

(51) Internationale Patentklassifikation (IPC):
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(52) Gemeinsame Patentklassifikation (CPC):
H04W 24/02; G05B 19/4185

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KH MA MD TN

(30) Priorität: **13.06.2023 EP 23179010**

(71) Anmelder: **Siemens Aktiengesellschaft**
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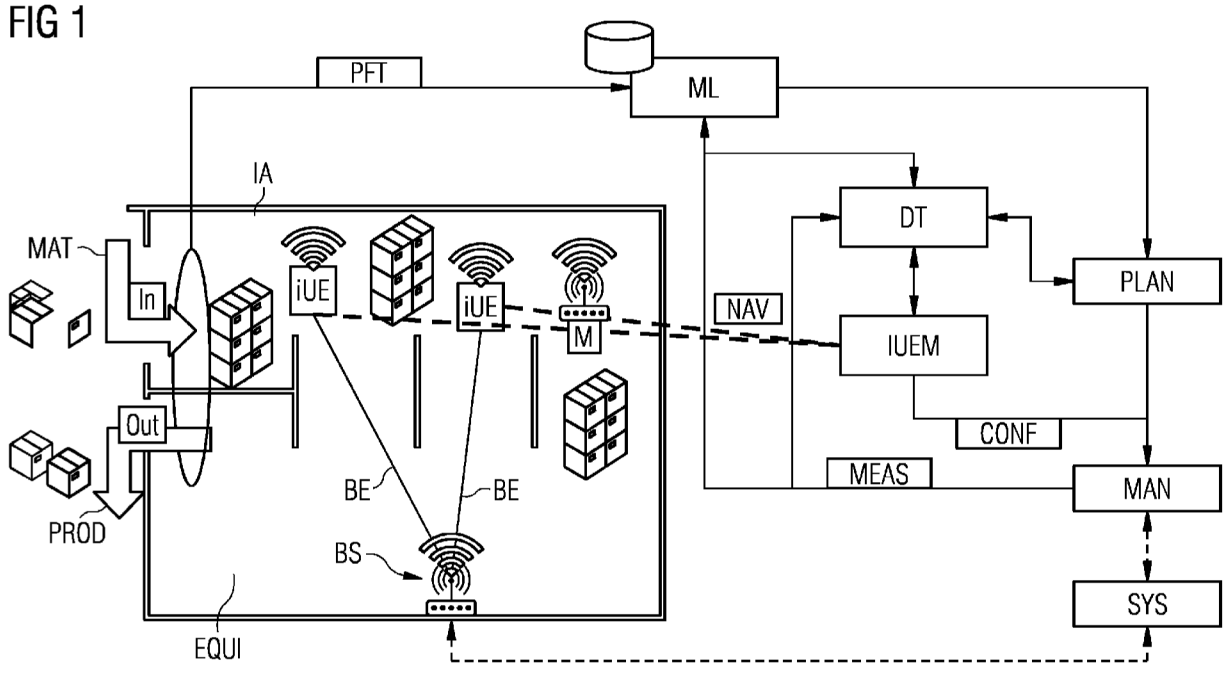
(54) **VERFAHREN ZUR EINRICHTUNG EINES INDUSTRIELLEN NETZWERKS UND NETZWERKKONFIGURATIONSEINHEIT**

(57) Bei dem Verfahren zur Einrichtung eines industriellen Netzwerks einer industriellen Anlage mit einer Basisinfrastruktur mit mindestens einer ersten Basisfunkstation wird die industrielle Anlage herangezogen, um eine Sollkonfiguration des industriellen Netzwerks zu bestimmen und es wird die Sollkonfiguration des industriellen Netzwerks mittels mindestens eines Endgeräts realisiert, welches als zusätzliche zweite Basisfunkstation/en herangezogen wird.

FIG 1



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(12) **Patent Application Publication**

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(43) **Pub. Date: Dec. 19, 2024**

HOSCHKE et al.

(54) **APPARATUS AND METHOD FOR RESTRICTING 3D PRINTING**

(71) Applicant: **Fraunhofer-Gesellschaft z. F. d. a. Forschung e.V.**, München (DE)

(72) Inventors: **Klaus HOSCHKE**, Freiburg (DE); **Johannes SOLASS**, Freiburg (DE)

(21) Appl. No.: **18/743,217**

(22) Filed: **Jun. 14, 2024**

(30) **Foreign Application Priority Data**

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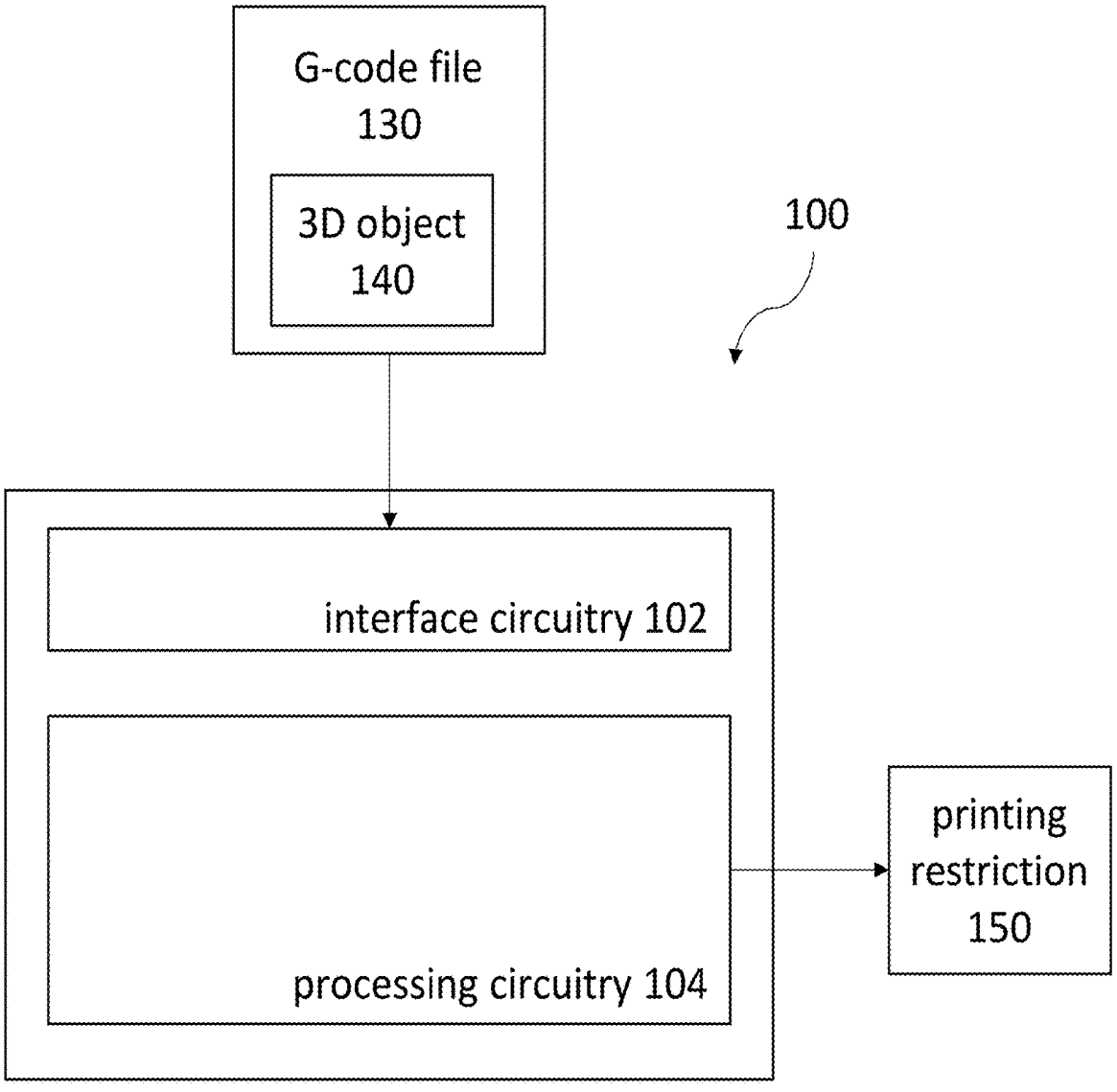
(52) **U.S. Cl.**
CPC ***G05B 19/4097*** (2013.01); *G05B 2219/32335* (2013.01); *G05B 2219/49023* (2013.01)

(57) **ABSTRACT**

The present disclosure relates to an apparatus for printing three-dimensional, 3D, objects by a 3D printer. The apparatus comprises interface circuitry configured to receive a G-code file comprising instructions for 3D printing of one or more 3D objects. The apparatus further comprises processing circuitry configured to classify a 3D object represented by the G-code file, and restrict 3D printing of the 3D object if the 3D object is classified as at least a part of a dangerous/illegal object.



(19) Europäisches Patentamt
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(52) Cooperative Patent Classification (CPC):
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Designated Extension States:
BA
Designated Validation States:
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(72) Inventor: **Depraz, Florian**
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(74) Representative: **Novagraaf International SA**
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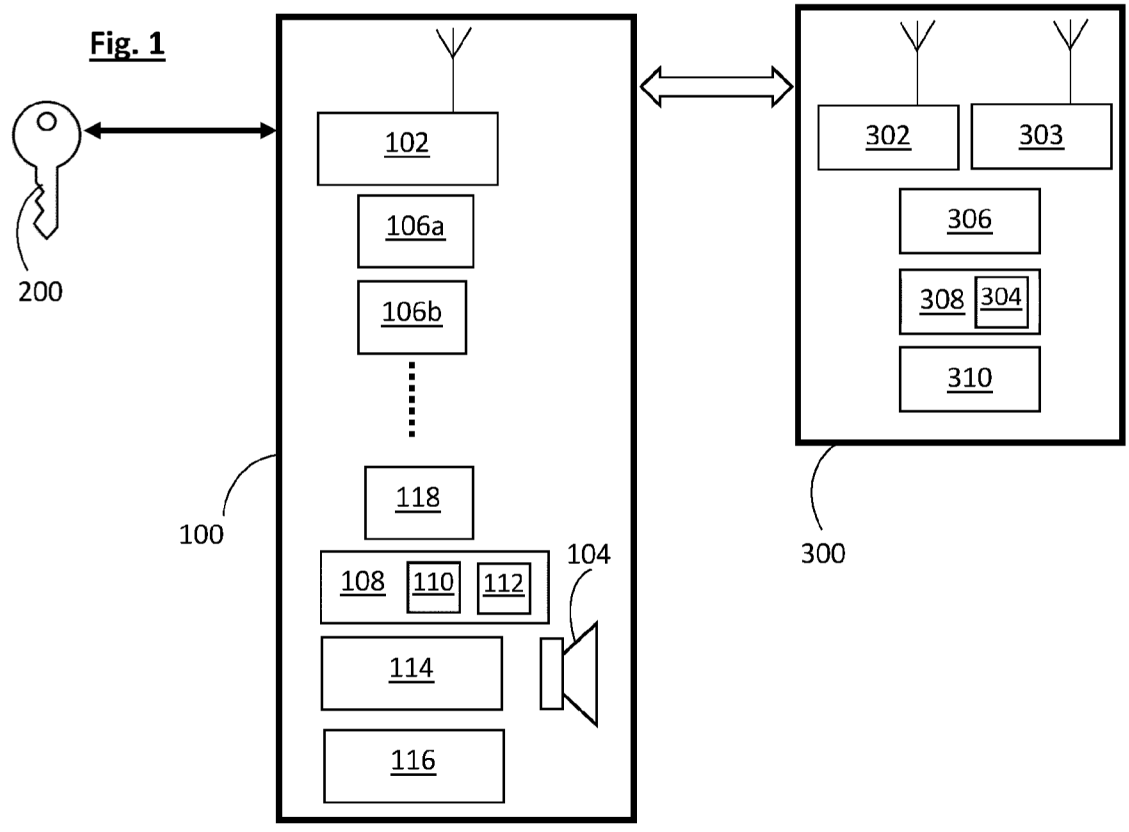
(54) **METHOD FOR LOCATING OBJECT ATTACHED TO WIRELESS COMMUNICATION DEVICE**

(57) The wireless communication device (100) includes a plurality of environmental sensors (106) configured to measure various environmental properties of an environment surrounding the object (200). The method comprises the steps, performed by a processor (114), of:

- receiving measured environmental data from the plurality of environmental sensors (106) measuring the various environmental properties;
- determining location information of the object (200) using the measured environmental data.

Fig. 1



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H04W 48/16 *(2009.01)* *H04W 88/06* *(2009.01)*
H04L 41/0806 *(2022.01)* *G05B 19/042* *(2006.01)*

(52) Cooperative Patent Classification (CPC):
H04W 8/005; H04L 41/0806; H04W 8/20; H04W 48/16; G05B 19/0426; H04L 41/24; H04W 12/06; H04W 88/06

(84) Designated Contracting States:
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Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

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(74) Representative: **Siemens Patent Attorneys**
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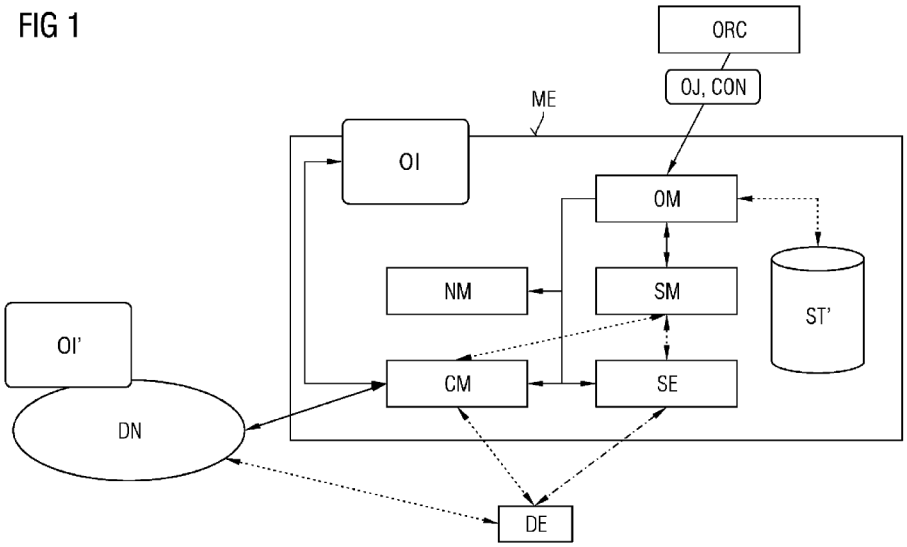
(54) A METHOD FOR ONBOARDING A DEVICE INTO A DATA NETWORK

(57) The invention refers to a method for onboarding a device (DE) into a data network (DN), comprising the following steps:
a) receiving by an onboarding management module (OM) of a mobile entity (ME) an onboarding job (OJ) and configuration data (CON) for an onboarding of the device (DE) based on the onboarding job (OJ);
b) positioning the mobile entity (ME) next to the device (DE) by the aid of a navigation module (NM) of the mobile entity (ME), where the navigation module (NM) recognizes when the mobile entity (ME) is next to the device (DE);
c) establishing a communication between the onboarding management module (OM) of the mobile entity (ME) and the device (DE) next to it via a communication module (CM) of the mobile entity (ME);
d) performing an onboarding process of the device (DE) into the data network (DN) via the established communication based on the configuration data (CON).

FIG 1



EP 4 478 756 A1

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 478 137 A1**

(12) **EUROPÄISCHE PATENTANMELDUNG**

(43) Veröffentlichungstag:
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(22) Anmeldetag: **12.06.2023**

(51) Internationale Patentklassifikation (IPC):
G05B 19/042 *(2006.01)* ***G05B 19/05*** *(2006.01)*
G05B 23/02 *(2006.01)*

(52) Gemeinsame Patentklassifikation (CPC):
G05B 19/0428; G05B 23/0267; G05B 2219/24103; G05B 2219/24123

(84) Benannte Vertragsstaaten:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Benannte Erstreckungsstaaten:
BA
Benannte Validierungsstaaten:
KH MA MD TN

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(72) Erfinder: **Lutz, Benjamin**
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(74) Vertreter: **Siemens Patent Attorneys**
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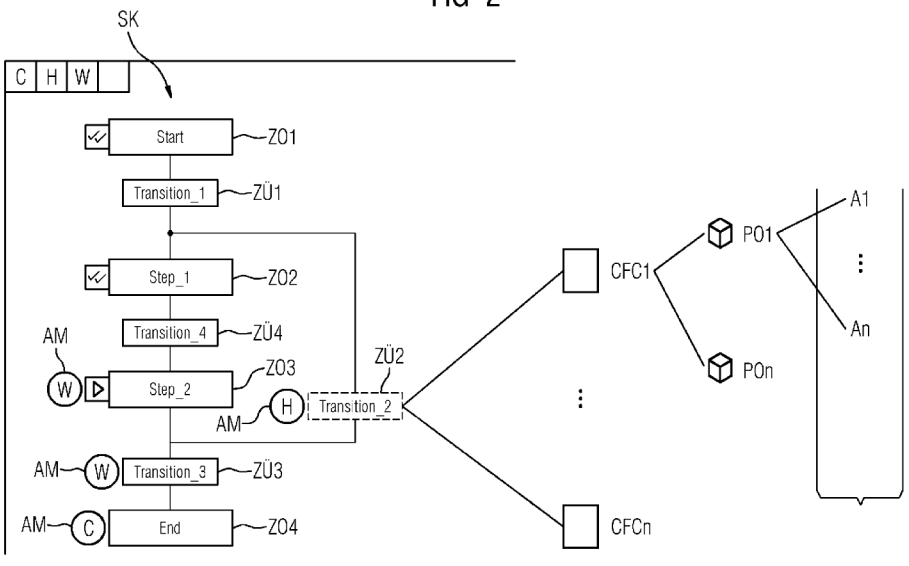
(54) **LEITSYSTEM FÜR EINE TECHNISCHE ANLAGE**

(57) Die Erfindung betrifft Leitsystem (14) für eine technische Anlage umfassend
ein Automatisierungsgerät (20), welches ausgestaltet ist zum Steuern einer technischen Anlage zuvor projektierte oder programmierte Schrittketten (SK) mit zuvor projektierten oder programmierten Bausteinen (FB) ablaufen zu lassen,
den Bausteinen (FB) sind Prozessobjekte (PO) zugeordnet, wobei die Prozessobjekte (PO) Variablen (var) für Prozesswerte (PW) umfassen, um eine Bedienung zu vereinfachen wird vorgeschlagen, ein Alarmmeldesystem (40) um eine Schrittketten-Alarmkomponente (42) zu erweitern, um für die in den Schrittketten (SK) involvierten Prozessobjekte (PO) und Bausteine (FB) eine Querverweisliste (QV) von den Alarmmeldungen (A1,A2,A3,A4) zu den Prozessobjekten (PO) und den Alarmmeldungen (A1,A2,A3,A4) zu den Bausteinen (FB) zu ermitteln und in einer auf eine Schrittkette (SK) bezogenen Alarmstatus-Struktur (AS) als Datensatz abzubilden,
wobei der Visualisierungs-Generator (2) weiterhin dazu ausgestaltet ist bei einem Aufruf zur grafischen Darbietung der Schrittkette (SK) die Schrittketten-Alarmkomponente (42) nach einem aktuellen Alarmstatus abzufragen und die Alarmstatus-Struktur (AS) für die Schrittkette (SK) zu laden.

FIG 2



EP 4 478 137 A1

(12) UK Patent Application (19) GB (11) 2630946 (13) A

(43) Date of A Publication 18.12.2024

(21) Application No: 2308827.1

(22) Date of Filing: 13.06.2023

(71) Applicant(s):
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(72) Inventor(s):
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(51) INT CL:
E04D 15/02 (2006.01)

(56) Documents Cited:
JP 2021021203 A **JP 2003127092 A**
US 20190156570 A

(58) Field of Search:
INT CL **E04D**
Other: **WPI, EPODOC**

(54) Title of the Invention: **Method of covering a portion of an object**
Abstract Title: **Method of covering a portion of a roof**

(57) A method (500) of generating a cutting list for at least one building element among a plurality of building elements to be used to cover a portion of an object (200). The method (500) comprises: receiving (510) spatial data indicative of measured parameters associated with the portion of the object to be covered; generating (520), based on the received spatial data, the cutting list for obtaining the at least one building element among the plurality of building elements to be used to cover the portion of the object; and outputting (530) the cutting list. The elements may be roof tiles and the object to be covered a multi-pitch roof.

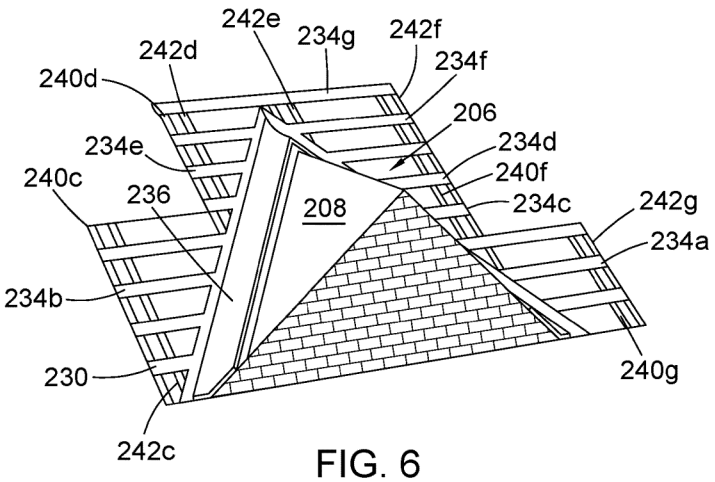


FIG. 6

GB 2630946 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

US 20240419847A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0419847 A1

Shinozaki (43) Pub. Date: Dec. 19, 2024

(54) METHOD OF MANUFACTURING ANALYSIS WITH ONTOLOGIES AND SEMANTIC ANALYSIS

(71) Applicant: **The Boeing Company**, Arlington, VA (US)

(72) Inventor: **John Makoto Shinozaki**, Kenmore, WA (US)

(21) Appl. No.: **18/641,819**

(22) Filed: **Apr. 22, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/508,188, filed on Jun. 14, 2023.

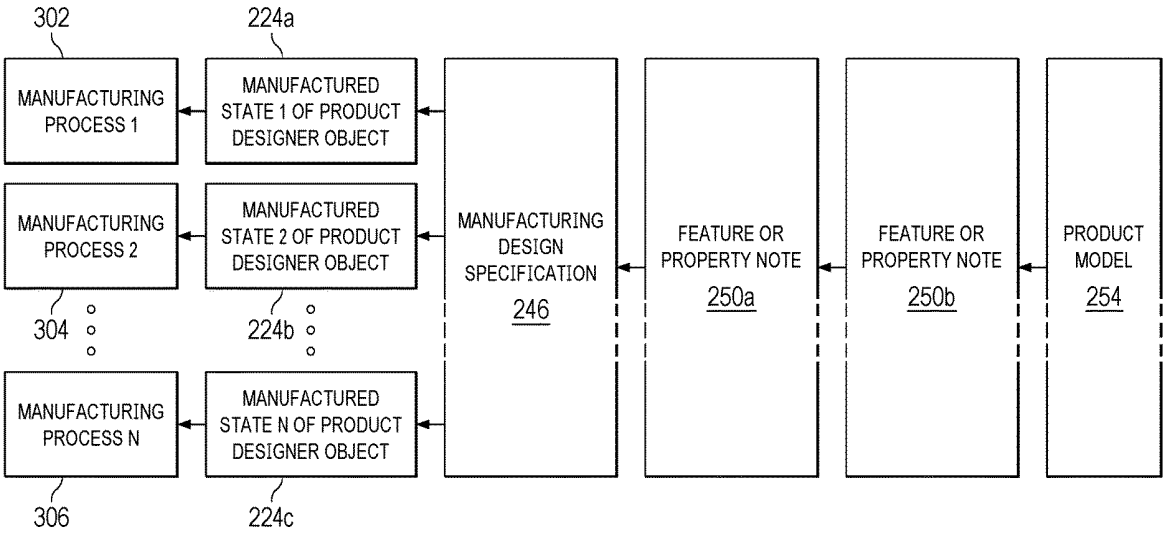
Publication Classification

(51) **Int. Cl.**
G06F 30/10 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 30/10*** (2020.01)

(57) **ABSTRACT**

Manufacturing analysis is provided. The method comprises identifying a feature of a product model defined by geometric, physical, and systems elements with semantic labels, names or title descriptions. Machine readable semantic links are created that connect the feature to elements in an enterprise knowledge library according to a machine readable ontological knowledge model. A producibility risk or opportunity for the product model is identified according to semantic relationships of the elements in the enterprise knowledge library linked to the feature. A user is alerted of the producibility risk or opportunity, and a note is added to a manufacturing design specification for the product model. The note provides a number of solutions for the producibility risk or opportunity, wherein the solutions are identified in the enterprise knowledge library according to the semantic relationships.



US 20240419156A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0419156 A1**

Mallari et al. (43) **Pub. Date: Dec. 19, 2024**

(54) **SEMICONDUCTOR FABRICATION CONTROL SYSTEM**

(71) Applicant: **Analog Devices International Unlimited Company**, Limerick (IE)

(72) Inventors: **Julius Seville Mallari**, Cavite (PH); **John Stephen Nichols**, Muntinlupa City (PH); **David Eguia**, Taguig City (PH); **Mariano Jr. Masagca Solero**, Muntinlupa City (PH); **Vermont P. Sanchez**, Cavite (PH); **Haydie L. Rodriguez**, Dasmarinas City (PH)

(73) Assignee: **Analog Devices International Unlimited Company**, Limerick (IE)

(21) Appl. No.: **18/732,474**

(22) Filed: **Jun. 3, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/521,025, filed on Jun. 14, 2023.

Publication Classification

(51) **Int. Cl.**

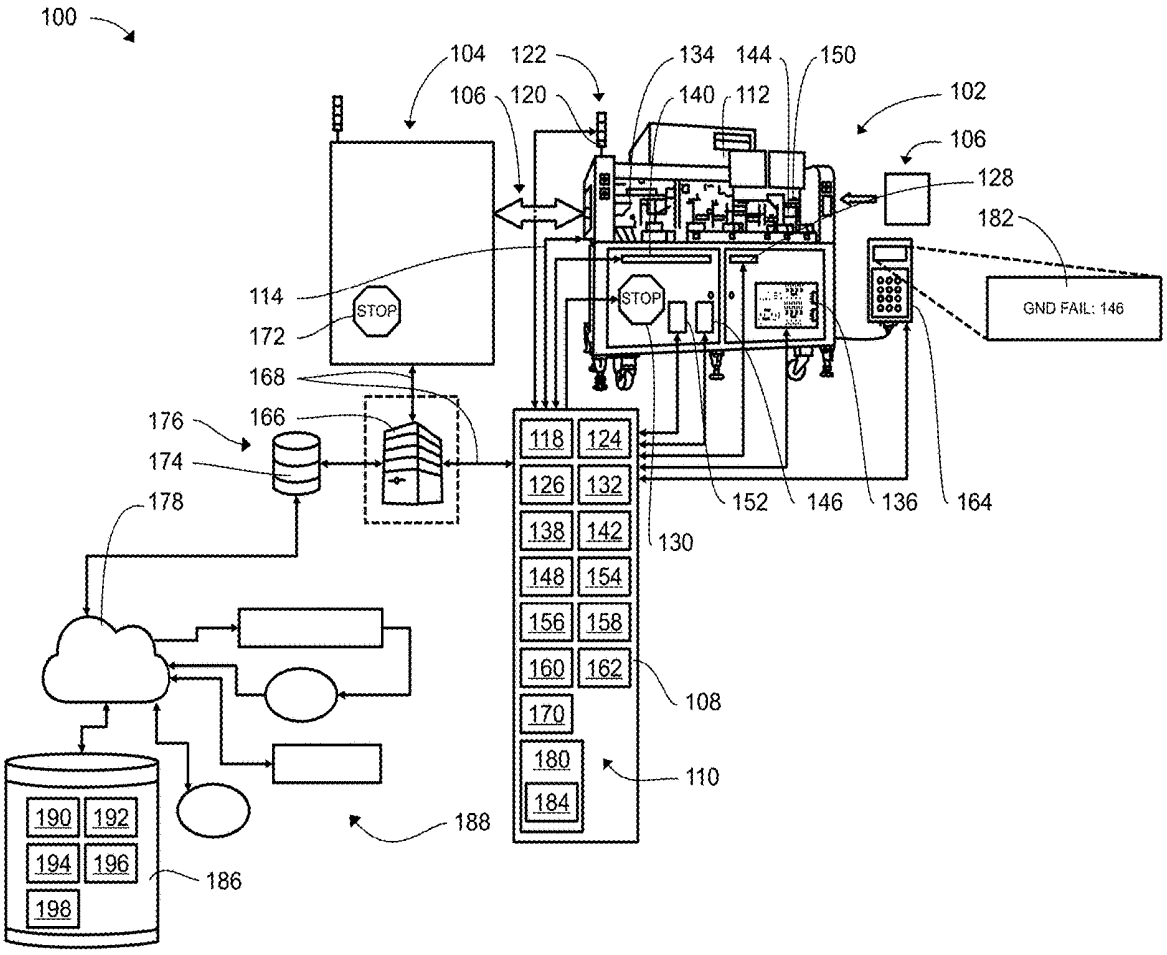
G05B 19/418	(2006.01)
H01L 21/66	(2006.01)
H01L 21/67	(2006.01)

(52) **U.S. Cl.**

CPC ***G05B 19/4189*** (2013.01); ***H01L 21/67276*** (2013.01); ***H01L 22/20*** (2013.01); *G05B 2219/45031* (2013.01)

(57) **ABSTRACT**

A semiconductor fabrication control system and method of operation can include: detecting a status with a control board communicatively coupled to a semiconductor fabrication tool; collecting process information from the semiconductor fabrication tool with the control board based on the status changing or a predetermined time elapsing; storing the process information to a server with the control board communicatively coupled to the server by a network connection; and engaging an auto-stop mechanism of the semiconductor fabrication tool to prevent the semiconductor fabrication tool from running based on the process information being wrong.



US 20240416511A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0416511 A1**

(43) **Pub. Date: Dec. 19, 2024**

Lee et al.

(54) **GRIPPER FOR A DOOR AND A CONTROL METHOD THEREOF**

(71) Applicants: **HYUNDAI MOTOR COMPANY**, Seoul (KR); **KIA CORPORATION**, Seoul (KR)

(72) Inventors: **Seung Ho Lee**, Incheon (KR); **Beomjun Kim**, Anyang-si (KR); **Seongsul Lee**, Gunpo-si (KR); **Moonhee Lee**, Hwaseong-si (KR)

(73) Assignees: **HYUNDAI MOTOR COMPANY**, Seoul (KR); **KIA CORPORATION**, Seoul (KR)

(21) Appl. No.: **18/511,310**

(22) Filed: **Nov. 16, 2023**

(30) **Foreign Application Priority Data**

Jun. 15, 2023 (KR) 10-2023-0076734

Publication Classification

(51) **Int. Cl.**

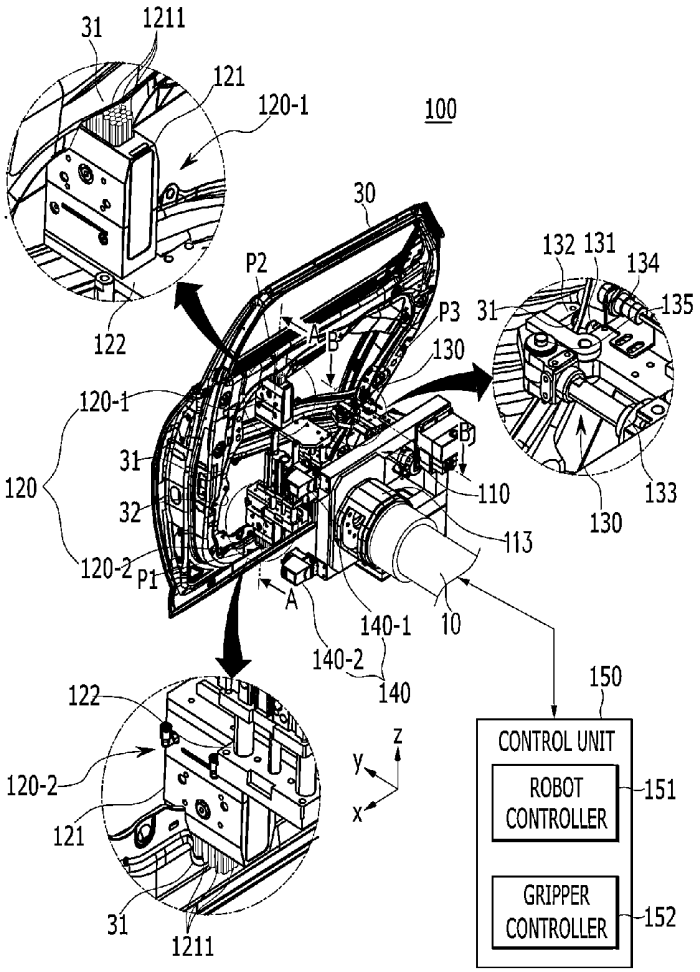
B25J 9/16 (2006.01)
B25J 13/08 (2006.01)
B25J 15/00 (2006.01)
B25J 19/02 (2006.01)

(52) **U.S. Cl.**

CPC ***B25J 9/1612*** (2013.01); ***B25J 9/1633*** (2013.01); ***B25J 9/1664*** (2013.01); ***B25J 13/088*** (2013.01); ***B25J 15/0061*** (2013.01); ***B25J 19/022*** (2013.01)

(57) **ABSTRACT**

A gripper mounted on a robot is used in a smart factory to pick a door loaded on a pallet. The gripper includes: a frame mounted on a tool changer of the robot; a picking unit mounted on a front of the frame and applying pressure to and regulating each of upper and lower points of an opening formed in an inner panel of the door through a bundle pin locator; and a pressure control valve adjusting the pressure of guide air cylinders. The gripper further includes: a side clamping unit mounted on the frame and holding a side point of the opening by a fixing locator and a clamper operating with a driving force of a clamping cylinder; and a control unit adjusting a moving distance of the robot based on a distance difference between the side clamping unit and the inner panel.



US 20240416523A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0416523 A1

Bao et al. (43) Pub. Date: Dec. 19, 2024

(54) MOBILE ROBOT CALIBRATION DEVICE, SYSTEM AND METHOD

(71) Applicants: **TE Connectivity Solutions GmbH**, Schaffhausen (CH); **Tyco Electronics (Shanghai) Co., Ltd.**, Shanghai (CN)

(72) Inventors: **Xianghao (Jorge) Bao**, Shanghai (CN); **Jian Cao**, Shanghai (CN); **Dandan (Emily) Zhang**, Shanghai (CN); **Senmiao Hu**, Shanghai (CN); **Yong (Bill) Wang**, Shanghai (CN); **Roberto Francisco-Yi Lu**, Bellevue, WA (US); **Lvhai (Samuel) Hu**, Shanghai (CN)

(73) Assignees: **TE Connectivity Solutions GmbH**, Schaffhausen (CH); **Tyco Electronics (Shanghai) Co., Ltd.**, Shanghai (CN)

(21) Appl. No.: **18/743,280**

(22) Filed: **Jun. 14, 2024**

(30) **Foreign Application Priority Data**

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Publication Classification

(51) **Int. Cl.**

B25J 9/16 (2006.01)

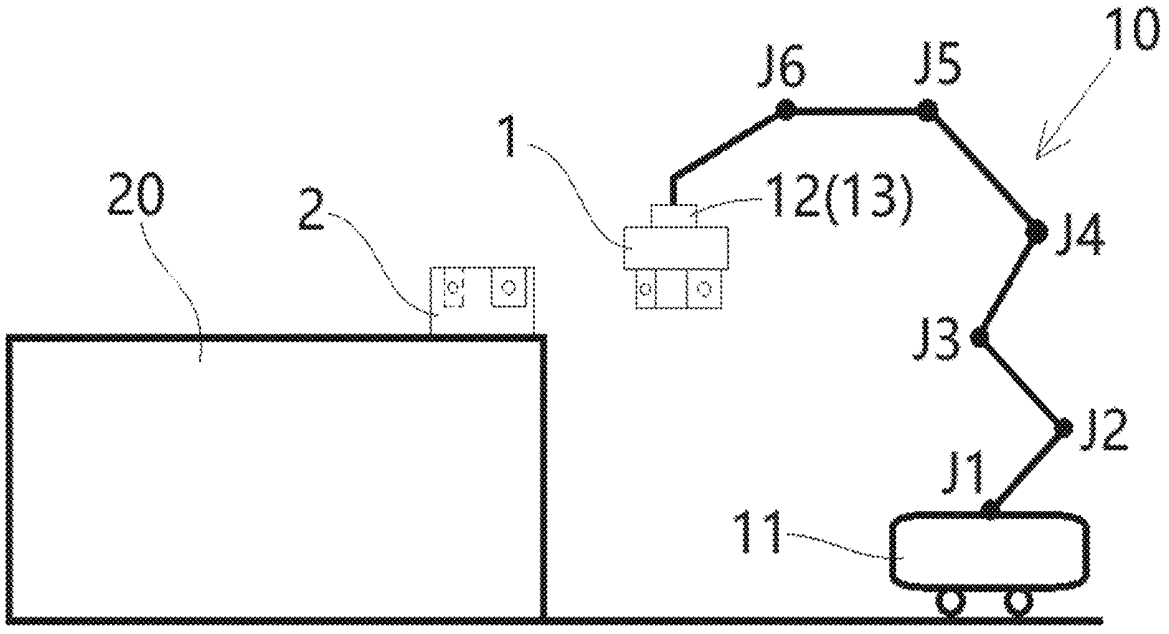
B25J 5/00 (2006.01)

(52) **U.S. Cl.**

CPC ***B25J 9/1692*** (2013.01); ***B25J 9/1653*** (2013.01); ***B25J 9/1664*** (2013.01); *B25J 5/007* (2013.01)

(57) **ABSTRACT**

A mobile robot calibration device comprises a first positioning block and a second positioning block. The first positioning block has a positioning protrusion, and the second positioning block has a positioning slot. The positioning protrusion complements, and is adapted to mate with, the positioning slot. One of the first positioning block or the second positioning block is adapted to be installed on a flange or tool at an end of a mobile robot, and the other is adapted to be installed on a support base (e.g., a workbench).



(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 4 477 353 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.12.2024 Bulletin 2024/51

(21) Application number: **24180803.9**

(22) Date of filing: **07.06.2024**

(51) International Patent Classification (IPC):
B24B 7/22 *(2006.01)* ***B24B 7/26*** *(2006.01)*
B24B 27/00 *(2006.01)* ***B24B 9/00*** *(2006.01)*
B23Q 15/16 *(2006.01)* ***B24B 9/06*** *(2006.01)*
B24B 47/25 *(2006.01)* ***B24B 49/00*** *(2012.01)*
B24B 49/16 *(2006.01)* ***B24B 49/18*** *(2006.01)*
G05B 19/404 *(2006.01)* ***B24B 49/10*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B24B 9/002; B23Q 15/16; B24B 7/22; B24B 7/26; B24B 9/06; B24B 27/0023; B24B 27/0076; B24B 47/25; B24B 49/003; B24B 49/10; B24B 49/16; B24B 49/183; G05B 19/404;
G05B 2219/37351; G05B 2219/37434; (Cont.)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **14.06.2023 IT 202300012228**

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- **Keda Europe S.r.l.**
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(72) Inventors:
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- **VANDELLI, Massimo**
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(74) Representative: **Provvisionato, Paolo**
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(54) MACHINE FOR RECTIFYING PANELS FOR CONSTRUCTION, FOR EXAMPLE, FOR WALL COVERINGS OR FOR FLOORINGS

(57) A machine for rectifying panels for construction, for example, for wall coverings or for floorings, comprises a structure for supporting and moving panels in a supply direction (L). The machine further comprises at least one rectification tool (11) which is configured to operate on the panels and at least one movement mechanism (40) for adjusting the position of the rectification tool with respect to the supply direction (L) in an adjustment direction (T) in order to compensate for the progressive wear of the rectification tool (11) in contact with the panels. The machine also comprises at least one vibration sensor (64) which is provided to detect the vibrations of the at least one rectification tool (11) during use, during the contact with the panels. A data-processing system is programmed to receive the vibration data which are detected, during use, by the vibration sensor (64) and to compare them with reference vibration data which indicate a predetermined working condition of the rectification tool in contact with the panels, which corresponds to a predetermined position of the rectification tool with respect to the supply direction (T). The processing system outputs an adjustment activation instruction in order to activate the movement mechanism (40) in order to move the rectification tool in the adjustment direction (T) when a predetermined deviation between the vibration data which are detected by the vibration sensor with respect to the reference vibration data is exceeded. The processing system further outputs an adjustment deactivation instruction in order to deactivate the movement mechanism (40) in order to interrupt the movement of the rectification tool in the adjustment direction (T) when the deviation between the vibration data detected by the vibration sensor and the reference vibration data is within a predetermined value.

EP 4 477 353 A1

US012168296B1

(12) **United States Patent**
Bennice et al.

(10) **Patent No.: US 12,168,296 B1**
(45) **Date of Patent: Dec. 17, 2024**

(54) **RE-SIMULATION OF RECORDED EPISODES**

(71) Applicant: **GOOGLE LLC**, Mountain View, CA (US)

(72) Inventors: **Matthew Bennice**, San Jose, CA (US); **Paul Bechard**, San Jose, CA (US); **Joséphine Simon**, San Francisco, CA (US)

(73) Assignee: **GOOGLE LLC**, Mountain View, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 338 days.

(21) Appl. No.: **17/463,870**

(22) Filed: **Sep. 1, 2021**

(51) **Int. Cl.**
B25J 9/16 (2006.01)

(52) **U.S. Cl.**
CPC ***B25J 9/1605*** (2013.01); ***B25J 9/163*** (2013.01); ***B25J 9/1671*** (2013.01)

(58) **Field of Classification Search**
CPC B25J 9/1605; B25J 9/163; B25J 9/1671
See application file for complete search history.

(56) **References Cited**

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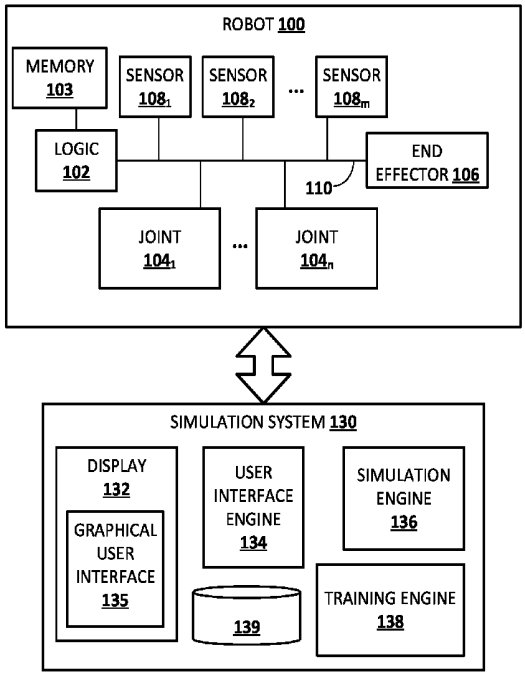
(Continued)

Primary Examiner — Adam R Mott
Assistant Examiner — Alyzia N Dilworth
(74) *Attorney, Agent, or Firm* — Gray Ice Higdon

(57) **ABSTRACT**

Implementations are provided for generating a plurality of simulated training instances based on a recorded user-directed robot control episode, and training one or more robot control policies based on such training instances. In various implementations, a three-dimensional environment may be simulated and may include a robot controlled by an external robot controller. A user may operate the robot controller to control the robot in the simulated 3D environment to perform one or more robotic tasks. The user-directed robot control episode, including responses of the external robot controller and the simulated robot to user commands and/or the virtual environment, can be captured. Features of the captured user-directed robot control episode can be altered in order to generate a plurality of training instances. One or more robot control policies can then be trained based on the plurality of training instances.

16 Claims, 6 Drawing Sheets



US012169802B1

(12) **United States Patent**
Eldan et al.

(10) **Patent No.: US 12,169,802 B1**
(45) **Date of Patent: Dec. 17, 2024**

(54) **DIGITAL PROCESSING SYSTEMS AND METHODS FOR MANAGING WORKFLOWS**

(71) Applicant: **Monday.com LTD.**, Tel Aviv (IL)

(72) Inventors: **Ran Eldan**, Giv'atayim (IL); **Noam Neeman**, Ramat Gan (IL); **Eran Helft**, Tel Aviv-Jaffa (IL)

(73) Assignee: **MONDAY.COM LTD.**, Tel Aviv (IL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/401,363**

(22) Filed: **Dec. 30, 2023**

Related U.S. Application Data

(63) Continuation of application No. PCT/IB2023/061994, filed on Nov. 28, 2023.

(51) **Int. Cl.**
G06Q 10/0631 (2023.01)
G06Q 10/0633 (2023.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06316*** (2013.01); *G06Q 10/0633* (2013.01)

(58) **Field of Classification Search**
CPC G06Q 10/00–50/00
USPC 705/7.11–7.42
See application file for complete search history.

(56) **References Cited**

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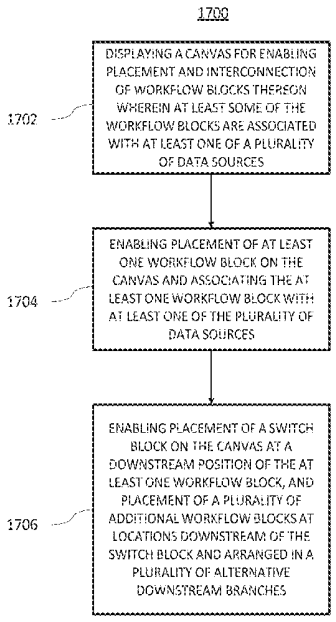
(Continued)

Primary Examiner — Alan S Miller
(74) *Attorney, Agent, or Firm* — Finnegan, Henderson, Farabow, Garrett & Dunner LLP

(57) **ABSTRACT**

Systems, methods, and computer-readable media for workflow construction operations include displaying a canvas for enabling placement and interconnection of workflow blocks with some of the workflow blocks being associated with data sources, enabling placement of a workflow block on the canvas and associating the at least one workflow block with at least one of the plurality of data sources, enabling placement of a switch block on the canvas at a downstream position of the workflow block and placement of a plurality of additional workflow blocks at locations downstream of the switch block and arranged in a plurality of alternative downstream branches. The switch block is configured to direct trigger action flow to the plurality of alternative downstream branches. The switch block is configured with a plurality of differing queries associated with the plurality of alternative downstream branches, at least one of the differing queries being associated with the data sources.

23 Claims, 27 Drawing Sheets



US012169804B1

(12) **United States Patent**
Grenet et al.

(10) **Patent No.: US 12,169,804 B1**
(45) **Date of Patent: Dec. 17, 2024**

(54) **SYSTEM AND METHOD FOR DYNAMIC CONTEXT SENSITIVE GUIDANCE**

(71) Applicant: **UIPCO, LLC**, San Antonio, TX (US)

(72) Inventors: **Eric Jason Grenet**, Boerne, TX (US); **Brian Christopher Hawes**, San Antonio, TX (US); **Paul Christopher Blanchard**, San Antonio, TX (US); **Phillip E. Marks**, San Antonio, TX (US); **Jeffrey Walton Easley**, San Antonio, TX (US); **Douglas Austin Johnson**, San Antonio, TX (US); **Katrina Marie Zell**, San Antonio, TX (US); **Julia Yilan Kennedy**, Austin, TX (US); **Lawrence Paul McDermott, Jr.**, San Antonio, TX (US); **David Morley**, San Antonio, TX (US); **Christopher Collin Campbell**, San Antonio, TX (US)

(73) Assignee: **United Services Automobile Association (USAA)**, San Antonio, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 274 days.

(21) Appl. No.: **17/657,407**

(22) Filed: **Mar. 31, 2022**

Related U.S. Application Data

(60) Provisional application No. 63/169,076, filed on Mar. 31, 2021.

(51) **Int. Cl.**

G06Q 10/0639	(2023.01)
G06F 9/451	(2018.01)
G06Q 10/0631	(2023.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/0639*** (2013.01); ***G06F 9/453*** (2018.02); ***G06Q 10/063112*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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11,249,741	B2 *	2/2022	Sanan	G06F 8/61

(Continued)

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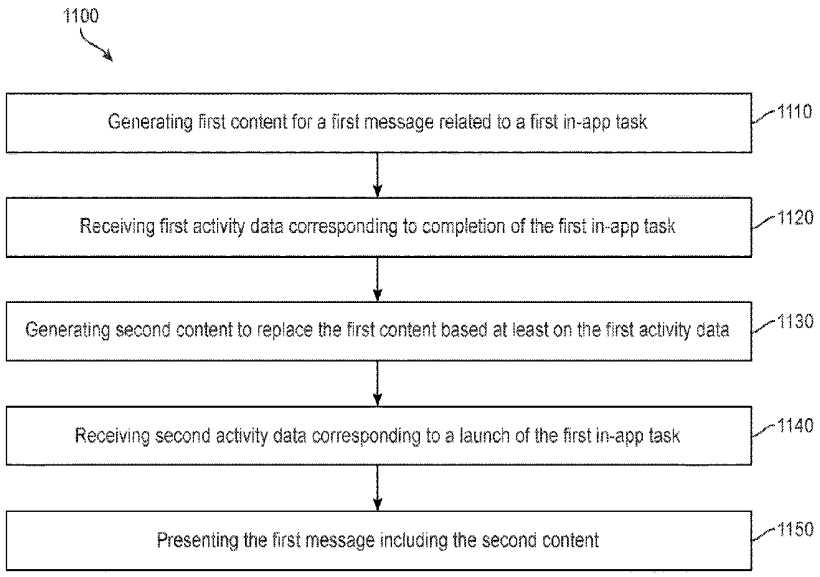
Primary Examiner — Stephanie Z Delich
(74) *Attorney, Agent, or Firm* — Plumsea Law Group, LLC

(57) **ABSTRACT**

A method and system of providing users with dynamic content about a specific task during access of an application based on previous in-app activity by the app's community of users for the task. The system identifies experienced user activity that represents an efficient performance of the task. The activity is stored in a repository for use by a dynamic content generation module. When subsequent users appear to need assistance in performing the task, the system can present content that is based on the more experienced users' activity. As additional data is collected, this content can be updated.

20 Claims, 11 Drawing Sheets



US 20240416819A1

(19) **United States**

(12) **Patent Application Publication**

Zuniga et al.

(10) **Pub. No.: US 2024/0416819 A1**

(43) **Pub. Date: Dec. 19, 2024**

(54) **MODULAR CONTAINER DELIVERY SYSTEM**

(71) Applicant: **Ford Global Technologies, LLC**, Dearborn, MI (US)

(72) Inventors: **Pablo Gabino Zuniga**, Iztapalapa (MX); **Jose Luis Toriz Vega**, Metepec (MX); **Diego Lopez Lerma**, Toluca (MX)

(73) Assignee: **Ford Global Technologies, LLC**, Dearborn, MI (US)

(21) Appl. No.: **18/333,539**

(22) Filed: **Jun. 13, 2023**

Publication Classification

(51) **Int. Cl.**

B60P 1/64 (2006.01)

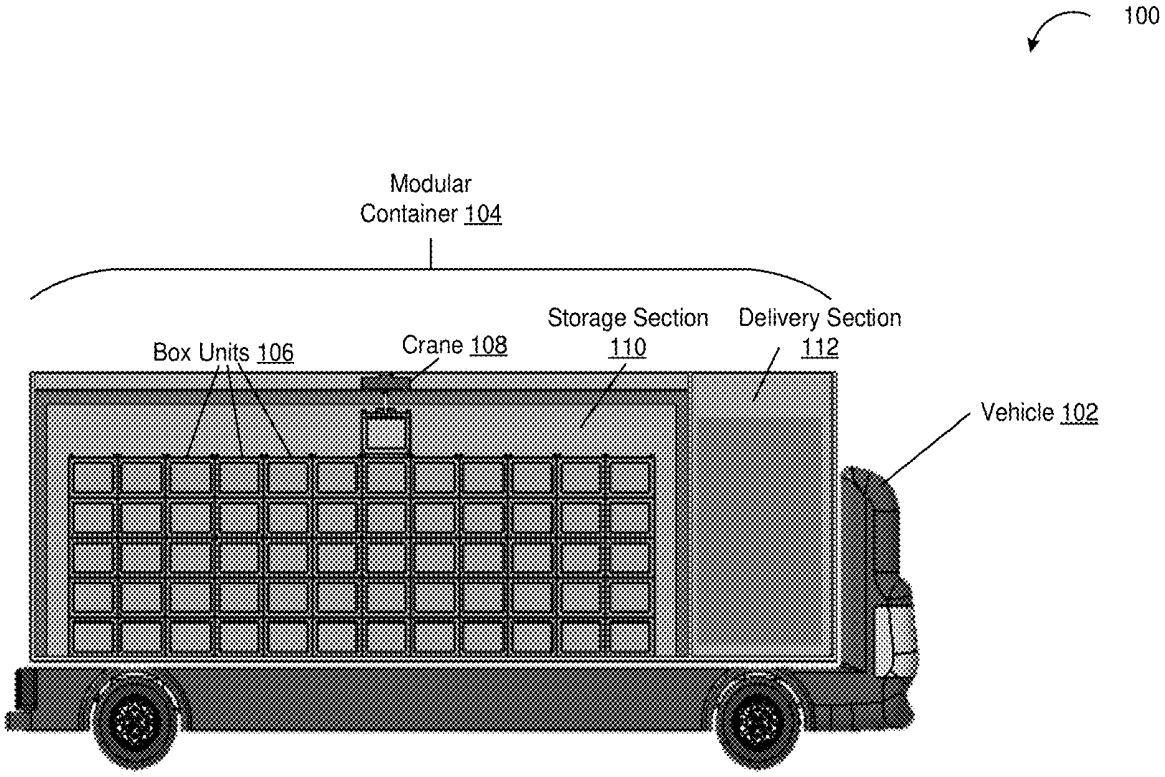
B60P 1/54 (2006.01)

(52) **U.S. Cl.**

CPC ***B60P 1/6409*** (2013.01); ***B60P 1/5471*** (2013.01); ***B60P 1/6418*** (2013.01); ***B60P 3/007*** (2013.01); ***G06Q 10/0833*** (2013.01)

(57) **ABSTRACT**

Modular container delivery systems and methods are described herein. A modular container delivery system may be implemented to facilitate autonomous delivery of packages to customers. A modular container, as described in greater detail below, may be attached to a battery operated electric vehicle (BEV) and autonomous driving platform chassis. The container system itself contains a package sorting mechanism that is configured to move packages inside the vehicle, organize them into separate section of the vehicle and retrieve packages for delivery on as needed.



US 20240416509A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0416509 A1**

Panigrahi et al. (43) **Pub. Date: Dec. 19, 2024**

(54) **ELEVATION CHANGE DETECTION SYSTEM, ROBOT INCLUDING SAME, AND ASSOCIATED METHOD**

(71) Applicant: **Ford Global Technologies, LLC**, Dearborn, MI (US)

(72) Inventors: **Smruti Panigrahi**, Novi, MI (US); **Jake Olkin**, Dearborn, MI (US)

(73) Assignee: **Ford Global Technologies, LLC**, Dearborn, MI (US)

(21) Appl. No.: **18/333,544**

(22) Filed: **Jun. 13, 2023**

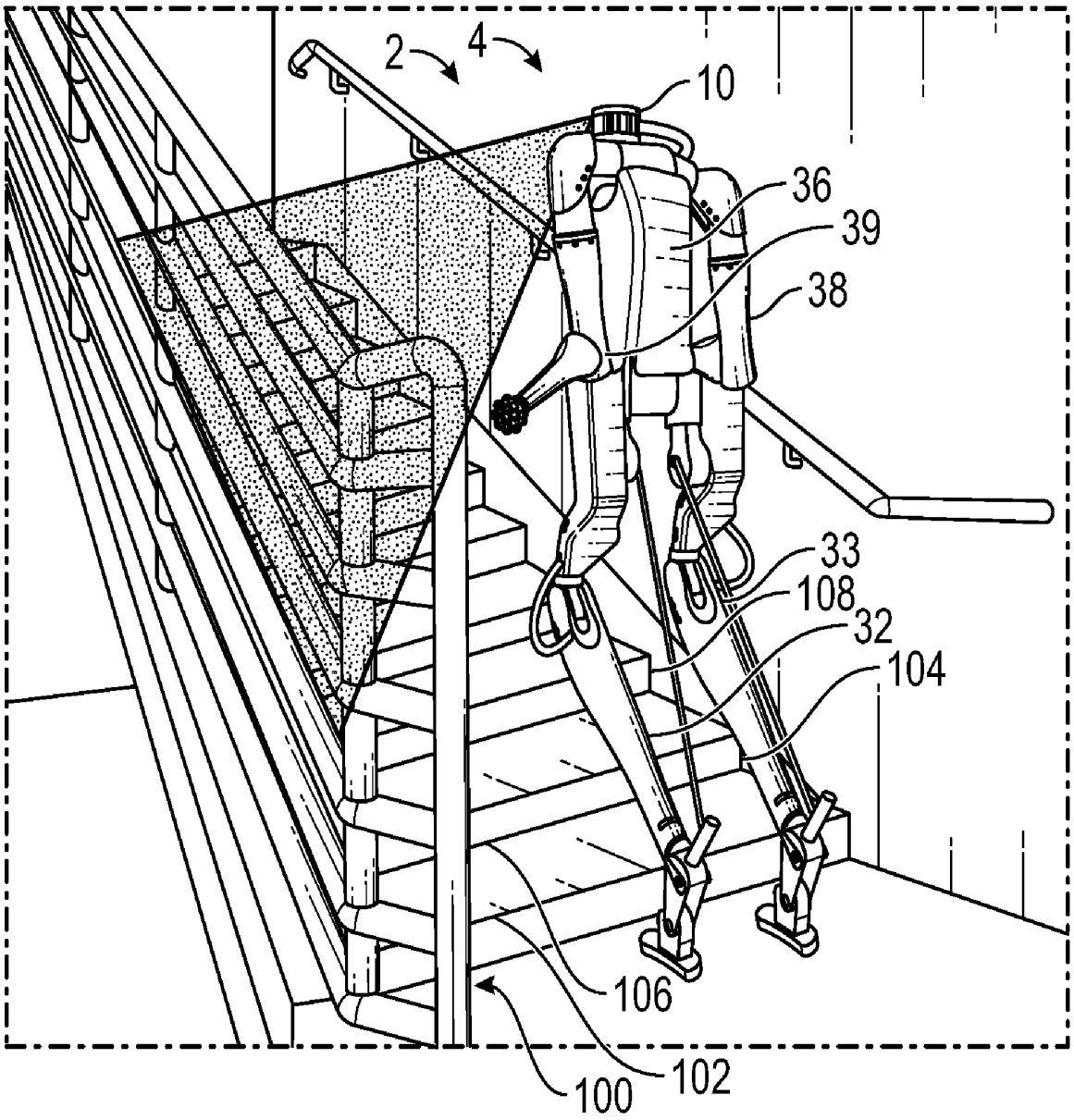
Publication Classification

(51) **Int. Cl.**
B25J 9/16 (2006.01)
B25J 19/02 (2006.01)

(52) **U.S. Cl.**
CPC ***B25J 9/161*** (2013.01); ***B25J 9/1666*** (2013.01); ***B25J 19/023*** (2013.01)

(57) **ABSTRACT**

An elevation change detection system is provided for a robot having an operating system. The elevation change detection system includes a sensor, a processor electrically connected to the sensor, and a memory. The memory has instructions that, when executed by the processor, cause the processor to perform operations including detect an edge of a structure with the sensor, classify an elevation change associated with the edge, and adjust the operating system based on the elevation change.



(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
12. Dezember 2024 (12.12.2024)

WIPO | PCT

(10) Internationale Veröffentlichungsnummer
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(51) Internationale Patentklassifikation:
G06F 30/23 (2020.01) *G06F 111/20* (2020.01)
B33Y 50/00 (2015.01) *G06F 113/08* (2020.01)
G05B 19/4099 (2006.01) *G06F 113/10* (2020.01)
G06F 111/06 (2020.01) *G06F 113/14* (2020.01)

(21) Internationales Aktenzeichen: PCT/EP2024/065260

(22) Internationales Anmeldedatum:
04. Juni 2024 (04.06.2024)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
23177960.4 07. Juni 2023 (07.06.2023) EP

(71) Anmelder: **EVONIK OPERATIONS GMBH** [DE/DE]; Rellinghauser Strasse 1-11, 45128 Essen (DE).

(72) Erfinder: **KLEINEKORTE, Johanna**; Beverstrasse 5, 52066 Aachen (DE). **REHAGE, Hendrik**; Pappelweg 21, 63452 Hanau (DE). **SCHAACK, Senada**; Katharina-Staritz-Strasse 10, 60438 Frankfurt am Main (DE).

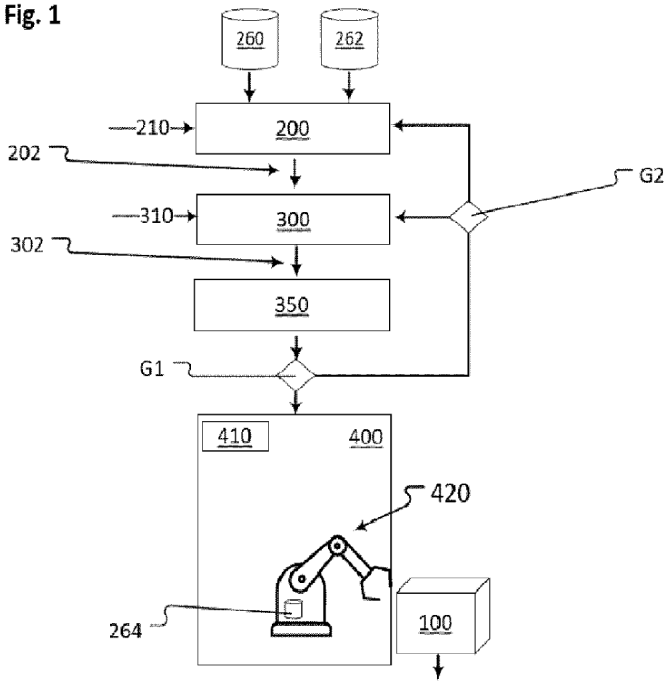
(74) Anwalt: **EVONIK PATENT ASSOCIATION**; c/o Evonik Industries AG, IP Management, Bau 1042A, PB15, Paul-Baumann-Strasse 1, 45772 Marl (DE).

(81) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart)*: 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,

(54) **Title:** COMPUTER-IMPLEMENTED METHOD FOR PRODUCING A CAD MODEL OF AN APPARATUS, AND ADDITIVE MANUFACTURING METHOD OF AN APPARATUS

(54) **Bezeichnung:** COMPUTER-IMPLEMENTIERTES VERFAHREN ZUR HERSTELLUNG EINES CAD-MODELLS EINES APPARATES UND ADDITIVES FERTIGUNGSVERFAHREN EINES APPARATES

Fig. 1



(57) **Abstract:** The invention relates to a computer-implemented method for producing a CAD model for an apparatus carrying a material system, wherein the material system comprises at least two material streams, and the apparatus is a heat exchanger or a reactor for synthesising at least one product from at least one starting material of at least one material stream, chosen from the following group: tube reactor, reactor with reaction and heat exchange channels or heat exchange chambers, continuous reactor, column with at least one intermediate tray, comprising the steps of: a) inputting system parameters into CAD software, wherein the system parameters comprise

WO 2024/251698 A1

[Fortsetzung auf der nächsten Seite]

US 20240411282A1

(19) **United States**

(12) **Patent Application Publication**

MUDHAR et al.

(10) **Pub. No.: US 2024/0411282 A1**

(43) **Pub. Date: Dec. 12, 2024**

(54) **MANUFACTURING INTEGRATION SYSTEM**

(71) Applicant: **Rivian IP Holdings, LLC**, Irvine, CA (US)

(72) Inventors: **Tanvir MUDHAR**, Hayward, CA (US); **Ghassan KHREIS**, San Francisco, CA (US); **Aldo ANSEL**, Irvine, CA (US)

(21) Appl. No.: **18/737,508**

(22) Filed: **Jun. 7, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/507,409, filed on Jun. 9, 2023.

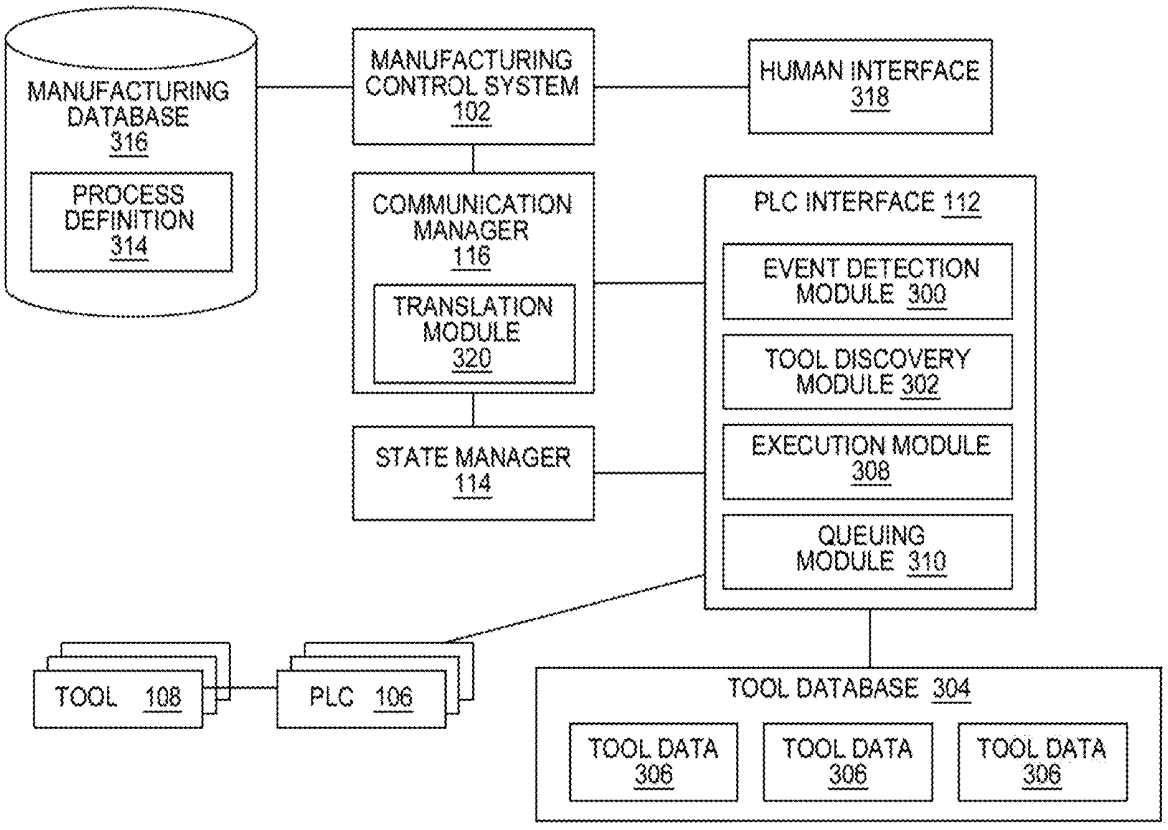
Publication Classification

(51) **Int. Cl.**
G05B 19/05 (2006.01)

(52) **U.S. Cl.**
CPC ***G05B 19/05*** (2013.01); *G05B 2219/13172* (2013.01)

(57) **ABSTRACT**

A system includes a plurality of manufacturing tools configured to perform a physical action contributing to manufacture of a product. The system further includes one or more programmable controllers coupled to the plurality of manufacturing tools and one or more lineside units coupled to the one or more programmable controllers. The one or more lineside units each configured to cooperate with the one or more programmable controllers to discover tool data describing services performed by one or more of the plurality of manufacturing tools, including command sets. The one or more lineside units receive a process definition from a remote manufacturing control system and translate the process definition into commands to the plurality of manufacturing tools according to the tool data. Results of implementing the commands is asynchronously reported to the manufacturing control system. The process definition may be retrieved directly from a manufacturing database.



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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 December 2024 (12.12.2024)

WIPO | PCT

(10) International Publication Number
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(51) International Patent Classification:
G06Q 10/00 (2023.01) *G06Q 50/04* (2012.01)
G06Q 10/063 (2023.01)

(21) International Application Number:
PCT/EP2024/064321

(22) International Filing Date:
24 May 2024 (24.05.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
23177298.9 05 June 2023 (05.06.2023) EP

(71) Applicant: **BASF SE** [DE/DE]; Carl-Bosch-Strasse 38, 67056 Ludwigshafen am Rhein (DE).

(72) Inventors: **DIKMANN, Thorsten**; Glasuritstraße 1, 48165 Münster (DE). **MOHR, Daniel**; Glasuritstraße 1, 48165 Münster (DE). **SMIETANKA, Jadwiga**; Aleje Jerozolimskie 142b, 02-305 Warszawa (PL).

(74) Agent: **BASF IP ASSOCIATION**; BASF SE GBI - C006, 67056 Ludwigshafen (DE).

(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, LY, MA, MD, MG, MK, MN, MU, 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))*

(54) **Title:** CONFIGURABLE DIGITAL TWINS OF CHEMICAL PRODUCTS

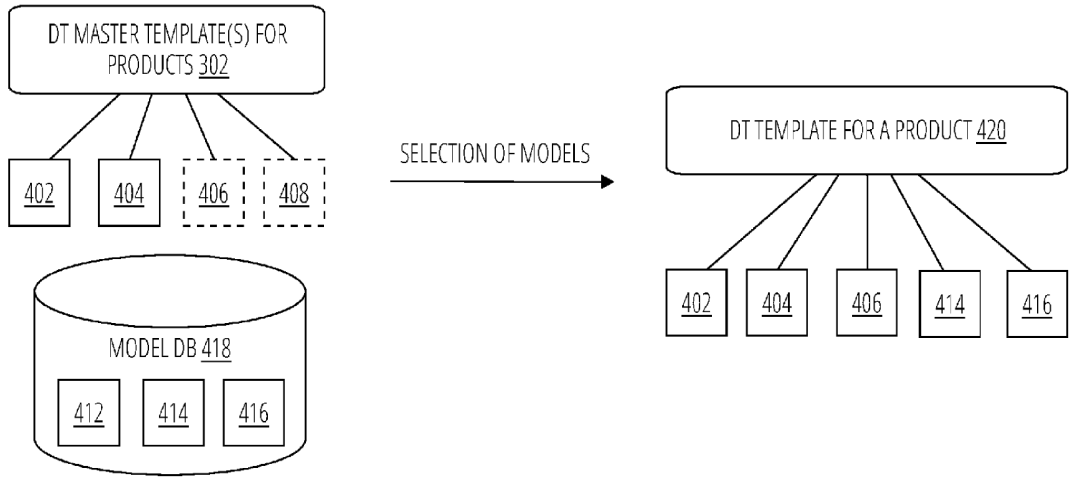


FIG. 4B

(57) **Abstract:** The present disclosure relates to an apparatus for generating a digital twin template associated with a product or a product class and a respective computer-implemented method and computer program element, an apparatus and system for generating a digital twin of a physical entity of a product and a respective computer-implemented method and computer program element, methods for providing a product associated with such a digital twin and respective apparatuses and a respective computer program element, a use of the digital twin, a product associated with such a digital twin, such a digital twin, and a computer-implemented method and apparatus for generating a digital access element associated with such a digital twin and a respective computer program element.

WO 2024/251538 A1

US 20240412167A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0412167 A1**

Pillalamarri et al. (43) **Pub. Date: Dec. 12, 2024**

(54) **AI-ASSISTED PRODUCT INNOVATION AND DEVELOPMENT PLATFORM AND METHOD WITH RISK DETECTION AND PREEMPTION**

(71) Applicant: **Stitch Technology Exploration Corporation**, Basking Ridge, NJ (US)

(72) Inventors: **Raghuram Kaushik Pillalamarri**, Basking Ridge, NJ (US); **Jan-Anders Mansson**, West Lafayette, IN (US)

(21) Appl. No.: **18/736,348**

(22) Filed: **Jun. 6, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/471,637, filed on Jun. 7, 2023, provisional application No. 63/471,678, filed on Jun. 7, 2023.

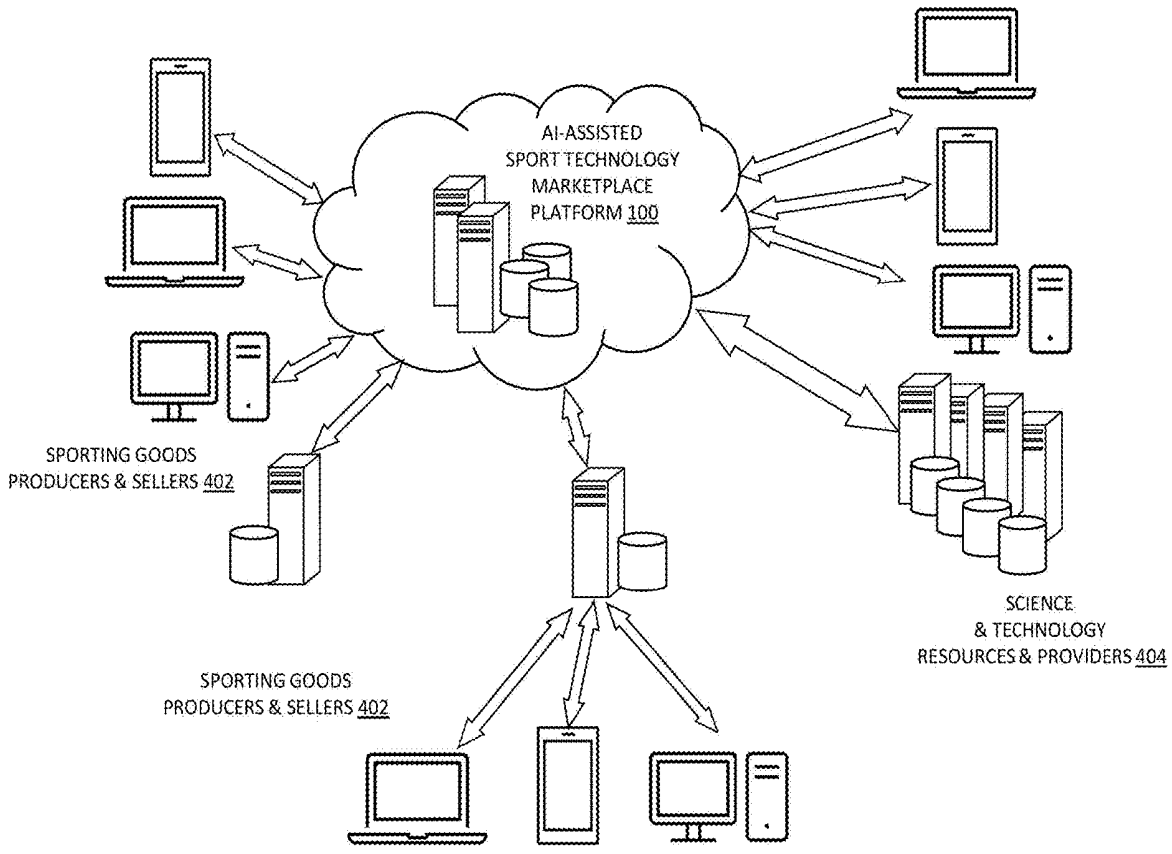
Publication Classification

(51) **Int. Cl.**
G06Q 10/10 (2006.01)
G06Q 10/0637 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/103*** (2013.01); ***G06Q 10/0637*** (2013.01)

(57) **ABSTRACT**

An AI-assisted project risk detection platform include a plurality of data trackers configured to automatically collect relevant data associated with a project, the relevant data being selected from the group consisting of project scope, tasks, project management, budget, resources, project team members, project milestones, project timeline, project status, product launch plan, market trends, economic trends, competitive landscape, legal and regulatory environment, consumer behavior, consumer preferences, customer feedback, and social media. These data trackers are installed at critical points along project execution path or product launch plan. The platform further includes an AI-assisted data analysis module configured to receive the relevant data collected by the data trackers, analyze the relevant data, identify emerging vulnerabilities and issues associated with the project, and determine corrective recommendations. The platform generates and transmits notification messages to project team members and stakeholders to notify them about the identified vulnerabilities, issues, and the corrective recommendations.



US 20240412148A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412148 A1**

(43) **Pub. Date: Dec. 12, 2024**

Kornienko

(54) **POLYMATIC SYSTEMS AND METHODS FOR OPTIMIZING SUPPLY CHAINS**

(71) Applicant: **ketteQ Holdings, Inc.**, Atlanta, GA (US)

(72) Inventor: **Andrey Kornienko**, Les Escaldes (AD)

(73) Assignee: **ketteQ Holdings, Inc.**, Atlanta, GA (US)

(21) Appl. No.: **18/430,754**

(22) Filed: **Feb. 2, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/442,764, filed on Feb. 2, 2023.

Publication Classification

(51) **Int. Cl.**

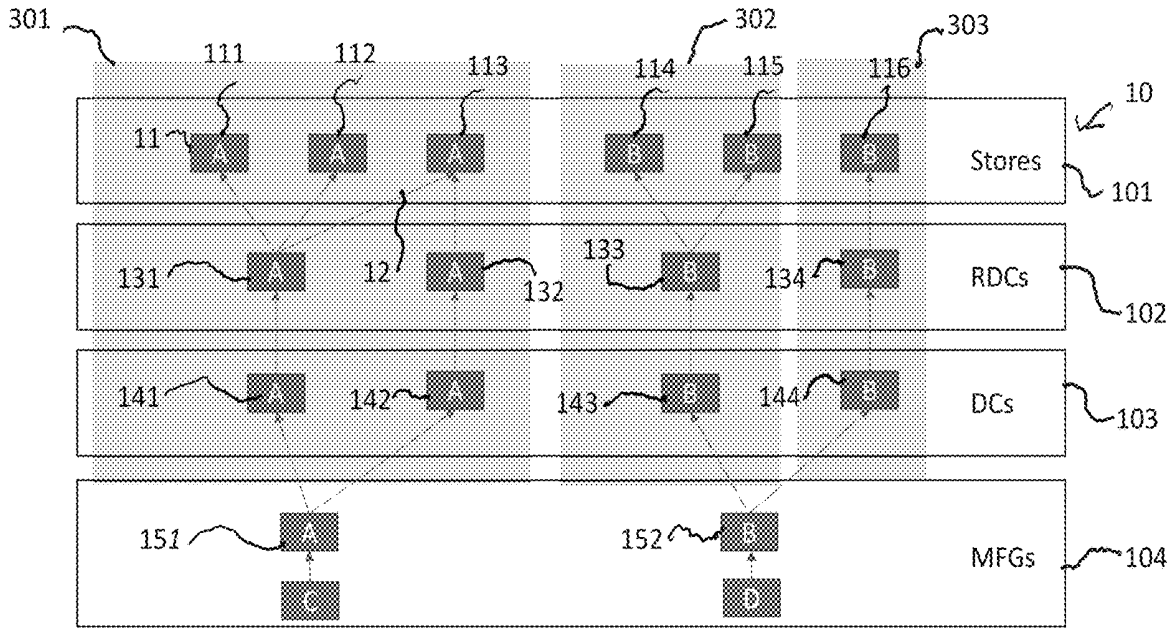
G06Q 10/067	(2006.01)
G06Q 10/0637	(2006.01)
G06Q 10/0639	(2006.01)
G06Q 10/08	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/067*** (2013.01); ***G06Q 10/06375*** (2013.01); ***G06Q 10/06395*** (2013.01); ***G06Q 10/08*** (2013.01)

(57) **ABSTRACT**

Methods and systems for supply chain optimization utilizing a polymatic solver architecture. Data is entered into a memory device. A graph network model is applied to the data to create a neural network. The neural network is parsed to divide the neural network into a plurality of subnetworks. Each subnetwork is sent to a job execution component. Each subnetwork is processed to produce a plurality of subnetwork scenarios. The subnetwork scenarios are superimposed to identify an optimum supply chain scenario. The optimum supply chain scenario is implemented as a plan.



US 20240409238A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0409238 A1

Zhang et al. (43) Pub. Date: Dec. 12, 2024

(54) METHOD AND DECISION TOOL FOR TRACKING SUSTAINABLE AVIATION FUEL USAGE AND EMISSIONS

(71) Applicant: **GENERAL ELECTRIC COMPANY**, Schenectady, NY (US)

(72) Inventors: **Feng Zhang**, Niskayuna, NY (US); **Kmk Genghis Khan**, Niskayuna, NY (US); **Joanne Morello**, Marion, NY (US); **Changjie Sun**, Clifton Park, NY (US); **Jieun Kirtley**, Blue Ash, OH (US)

(21) Appl. No.: **18/333,005**

(22) Filed: **Jun. 12, 2023**

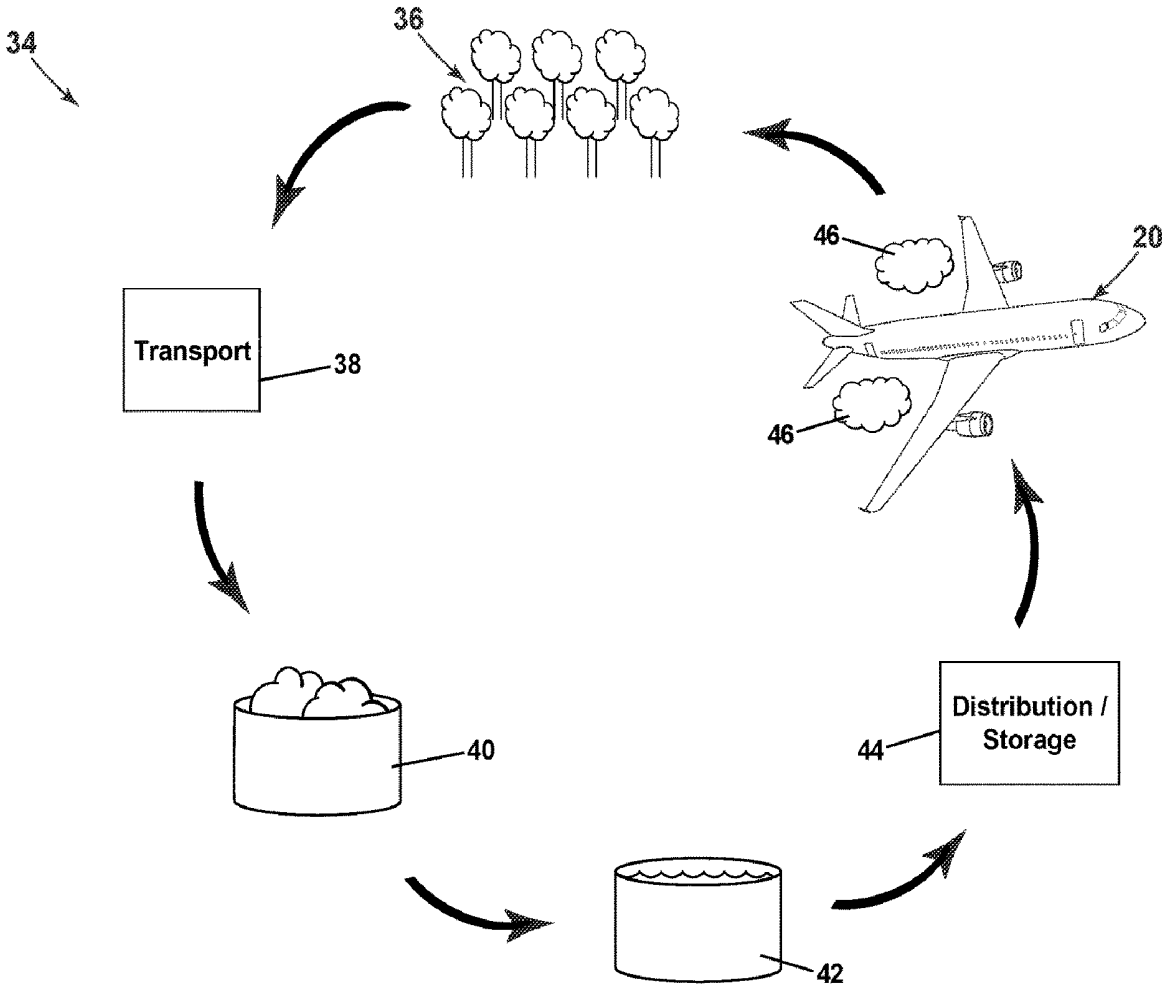
Publication Classification

(51) **Int. Cl.**
B64F 1/28 (2006.01)

(52) **U.S. Cl.**
CPC *B64F 1/28* (2013.01); *G06Q 30/018* (2013.01)

(57) **ABSTRACT**

A decision tool models emissions for a sustainable aircraft fuel (SAF) for the lifecycle of the fuel. The decision tool includes a controller module configured to receive data related to at least one fuel pathway for the fuel wherein the fuel pathway considers emissions from initial feedstock production to fuel burn during flight and arrival. The decision tool determines at least one fuel pathway for the fuel used to fuel the aircraft during a flight, models an emission score for the at least one fuel pathway, and then outputs the emission score where a user can purchase the fuel or make other decisions based upon the fuel pathway provided by the decision tool.



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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 December 2024 (12.12.2024)

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(10) International Publication Number
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C03B 23/045 (2006.01) *G05B 19/418* (2006.01)
C03B 23/09 (2006.01)

(21) International Application Number:
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(22) International Filing Date:
22 May 2024 (22.05.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/471,872 08 June 2023 (08.06.2023) US

(71) Applicant: **CORNING INCORPORATED** [US/US]; 1 Riverfront Plaza, Corning, New York 14831 (US).

(72) Inventors: **BARNARD, Christelle Ruby**; 110 Brook Road, Painted Post, New York 14870 (US). **GROSS, Eric Michael**; 166 Pine Street, Apt. 201, Corning, New York 14830 (US). **MATUSICK, Joseph Michael**; 3084 Goff Road, Corning, New York 14830 (US). **MCNELIS, Kevin Patrick**; 412 Rustic Ave., Elmira, New York 14905 (US). **O'MALLEY, Connor Thomas**; 103 Hornby Drive, Painted Post, New York 14870 (US).

(74) Agent: **PANIAN, Michael G.**; Corning Incorporated, Intellectual Property Department, SP-TI-03-1, Corning, New York 14831 (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,

(54) Title: DISTRIBUTION SHIFTING CONTROL METHODOLOGIES FOR CONVERTING GLASS TUBE TO GLASS ARTICLES

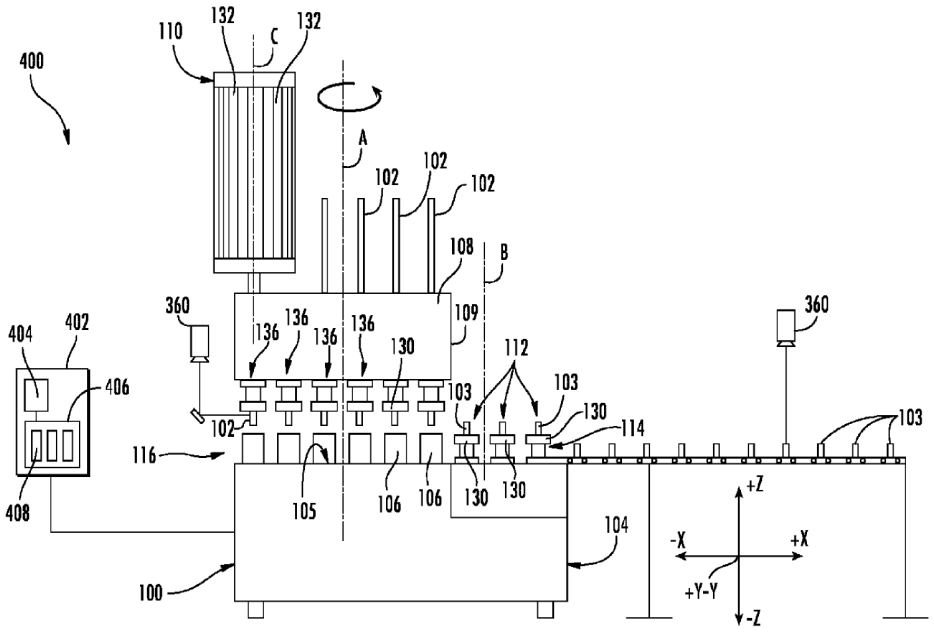


FIG. 1

(57) Abstract: Methods for controlling a converter includes operating the converter to produce glass articles from glass tubes, where the converter includes a plurality of processing stations and operating the converter includes translating the glass tubes through the processing stations in succession. The methods include measuring an attribute of the glass articles during or after conversion, developing an attribute distribution from measured values of the attribute, and shifting the attribute distribution within a specification range for the attribute. Shifting the attribute distribution within the specification range increases a yield of the glass articles. A system for converting glass articles from glass tubes includes a converter, a measuring device, a control device, and a control system operable to execute portions of or all of methods disclosed herein for controlling the converter.

WO 2024/253839 A1

[Continued on next page]

US 20240409251A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0409251 A1

TAMSHE et al. (43) Pub. Date: Dec. 12, 2024

(54) **AUTOMATIC FOOD PRODUCT FILLING DEVICE**

(71) Applicant: **PACKLINE USA, LLC**, Rancho Cucamonga, CA (US)

(72) Inventors: **Amir TAMSHE**, Rancho Cucamonga, CA (US); **Victor KATSELI**, Holon (IL)

(73) Assignee: **PACKLINE USA, LLC**, Rancho Cucamonga, CA (US)

(21) Appl. No.: **18/207,301**

(22) Filed: **Jun. 8, 2023**

Publication Classification

(51) **Int. Cl.**

B65B 3/32 (2006.01)

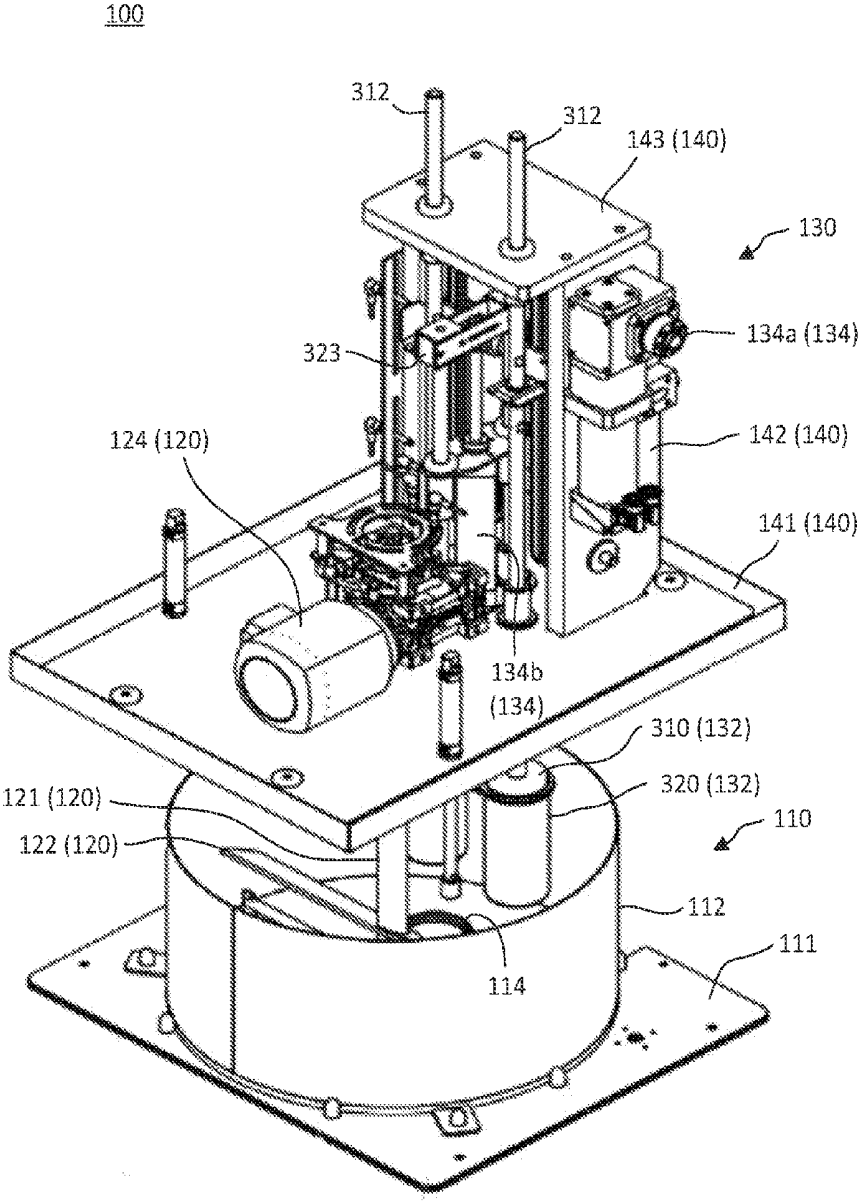
B65B 3/12 (2006.01)

(52) **U.S. Cl.**

CPC ***B65B 3/12*** (2013.01); ***G05B 19/04*** (2013.01); *B65B 3/326* (2013.01); *B65B 2220/14* (2013.01)

(57) **ABSTRACT**

Systems and methods for automatic filling of packaging with a food product that includes both a solid and a liquid are provided. A filling device includes: a vessel configured to hold the food product; a first piston system configured to push a portion of the food product within the vessel through a first through hole in a bottom of the vessel. The first piston system includes: a first piston; and a first sleeve that surrounds at least a portion of the first piston. The filling device further includes first actuators configured to independently actuate the first piston and the first sleeve such as to cause the portion of the food product to be pushed through the first through hole in the vessel.



US 20240412166A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412166 A1**

(43) **Pub. Date: Dec. 12, 2024**

GILGE et al.

(54) **SYSTEM AND METHOD FOR ASSESSING AND PLANNING A PROJECT**

(71) Applicant: **KPMG LLP**, New York, NY (US)

(72) Inventors: **Clay GILGE**, Seattle, WA (US); **Colin CAGNEY**, Phoenix, AZ (US); **Kevin MAX**, New York, NY (US); **Lienna TIEH**, Houston, TX (US); **Ken WIEGAND**, Seattle, WA (US)

(21) Appl. No.: **18/736,202**

(22) Filed: **Jun. 6, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/506,492, filed on Jun. 6, 2023.

Publication Classification

(51) **Int. Cl.**

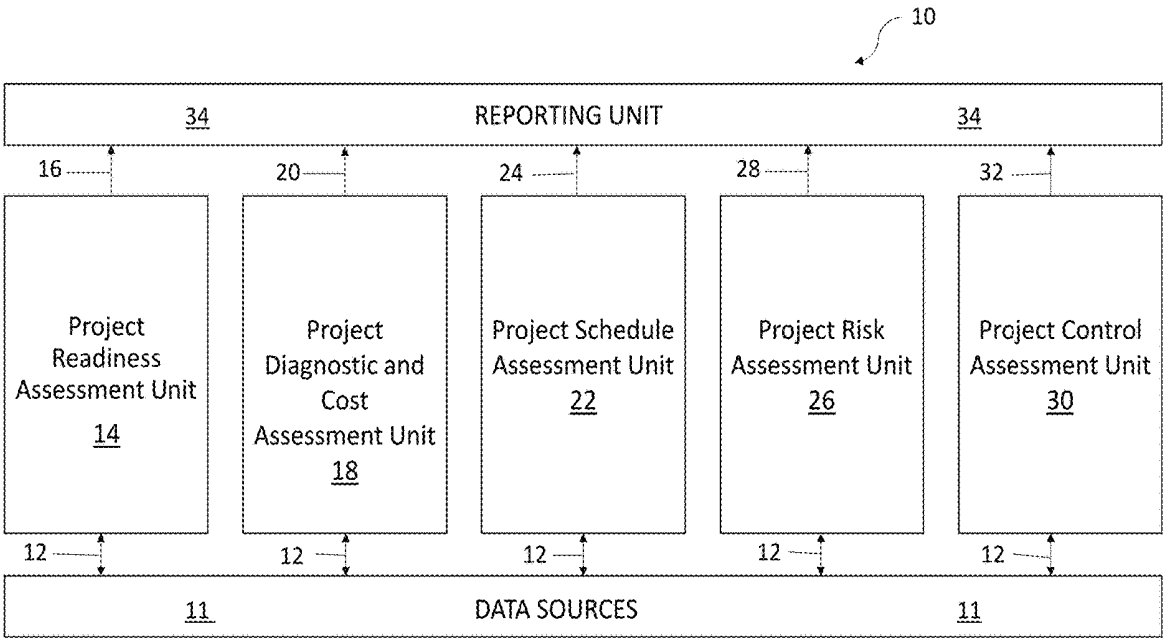
G06Q 10/10	(2006.01)
G06Q 10/0631	(2006.01)
G06Q 10/0635	(2006.01)

(52) **U.S. Cl.**

CPC ... ***G06Q 10/103*** (2013.01); ***G06Q 10/063114*** (2013.01); ***G06Q 10/06313*** (2013.01); ***G06Q 10/0635*** (2013.01)

(57) **ABSTRACT**

A computer-implemented system for assessing a project comprising a project readiness assessment unit for assessing a project readiness of a project based on project data and for generating a project assessment score. The system can include a project diagnostic assessment unit for receiving project cost data and for determining an accuracy of a cost associated with the project based on the project cost data and for generating a project cost accuracy score. A project schedule assessment unit can be employed for applying one or more schedule analysis and assessment techniques to the project schedule data to assess a quality and an accuracy of a project schedule and for generating a project schedule score. A project risk assessment unit can process project risk data for determining an inherent risk score associated with the project. A project control assessment unit can process project control data for generating a project control score.



US 20240411294A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0411294 A1**

Wankhede et al. (43) **Pub. Date: Dec. 12, 2024**

(54) **PRESCRIPTIVE INTELLIGENT SYSTEM FOR MOBILE INDUSTRIAL WORKERS**

(71) Applicant: **Aveva Software, LLC**, Lake Forest, CA (US)

(72) Inventors: **Moresh Wankhede**, Dartford (GB); **Leon Parsons**, St. Ives (GB); **Merylatha Meriyani**, Hyderabad (IN); **Timothy Cliff**, St. Ives (GB)

(21) Appl. No.: **18/736,796**

(22) Filed: **Jun. 7, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/471,591, filed on Jun. 7, 2023.

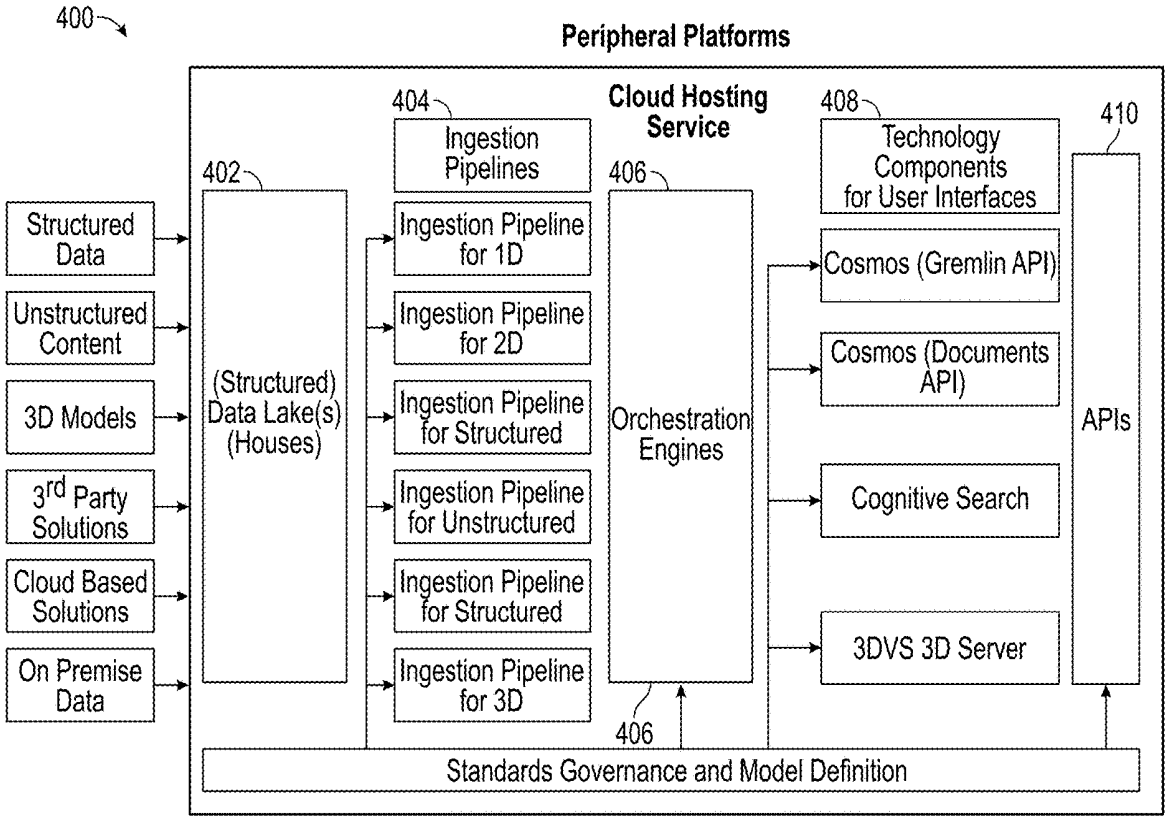
Publication Classification

(51) **Int. Cl.**
G05B 19/418 (2006.01)

(52) **U.S. Cl.**
CPC ***G05B 19/4184*** (2013.01); ***G05B 19/4183*** (2013.01); *G05B 2219/31439* (2013.01)

(57) **ABSTRACT**

A prescriptive intelligent system is provided for mobile industrial workers At least one data lake stores data associated with industrial assets and processes. At least one orchestration engine applies at least one information standard to at least one ingestion pipeline, which is enabled to process data from the at least one data lake and use artificial intelligence algorithms that identify actionable insights in the data, wherein actionable insights comprise solutions implemented in historical environments and feasible for other environments. A system stores the data as a knowledge graph across different types of technology components for user interfaces. A user interface responds to an excursion associated with an industrial asset and/or process by providing an overview of at least one of an industrial asset and/or process, an alarm, a root cause analysis, and/or a prescribed solution, and coordinates outputs from some of the different types of technology components.



US 20240412136A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412136 A1**

(43) **Pub. Date: Dec. 12, 2024**

HE et al.

(54) **METHOD AND APPARATUS WITH FLEXIBLE JOB SHOP SCHEDULING**

(71) Applicant: **Samsung Electronics Co., Ltd.**, Suwon-si (KR)

(72) Inventors: **Mengting HE**, Suwon-si (KR); **Tao ZHANG**, Suwon-si (KR); **Bo WEI**, Suwon-si (KR); **Jing LUO**, Suwon-si (KR); **Xiaoyu HUANG**, Suwon-si (KR); **Mengfei TONG**, Suwon-si (KR); **Feng ZHU**, Suwon-si (KR); **Hojae LEE**, Suwon-si (KR); **Lihao LUO**, Suwon-si (KR); **Yifei YANG**, Suwon-si (KR)

(73) Assignee: **Samsung Electronics Co., Ltd.**, Suwon-si (KR)

(21) Appl. No.: **18/736,925**

(22) Filed: **Jun. 7, 2024**

(30) **Foreign Application Priority Data**

Jun. 8, 2023 (CN) 202310679972.7
Jun. 7, 2024 (KR) 10-2024-0074438

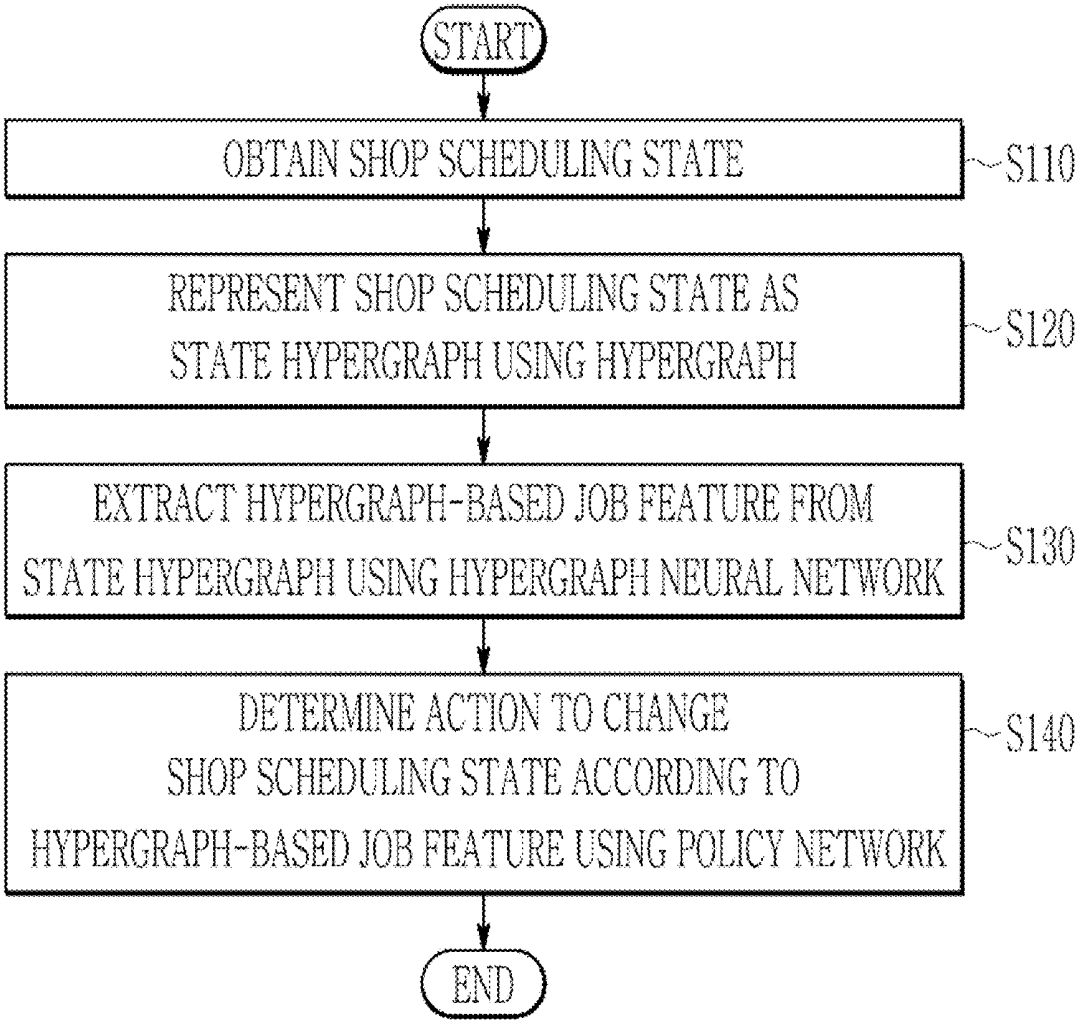
Publication Classification

(51) **Int. Cl.**
G06Q 10/0631 (2006.01)
G06Q 50/04 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06316*** (2013.01); ***G06Q 50/04*** (2013.01)

(57) **ABSTRACT**

A Flexible Job Shop scheduling method includes: obtaining a shop scheduling state including at least one of a sequential order dependency relationship between job tasks being processed, a sequential order dependency relationship between operation steps in each job task of the job tasks, a processing/being processed relationship between the job tasks and machines, or mutual constraint relationships between the machines; representing the shop scheduling state as a state hypergraph; extracting a hypergraph-based job feature from the state hypergraph using a hypergraph neural network; and determining an action configured to change the shop scheduling state, wherein the action is determined according to the hypergraph-based job feature using a policy network.



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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0414064 A1**

Ayachitula et al. (43) **Pub. Date: Dec. 12, 2024**

(54) **SELF-LEARNING AUTOMATED INFORMATION TECHNOLOGY CHANGE RISK PREDICTION**

(71) Applicant: **Kyndryl, Inc.**, New York, NY (US)

(72) Inventors: **Arun A. Ayachitula**, Dobbs Ferry, NY (US); **Rohit Khandekar**, Jersey City, NJ (US); **Upendra Sharma**, Hartsdale, NY (US)

(21) Appl. No.: **18/331,361**

(22) Filed: **Jun. 8, 2023**

Publication Classification

(51) **Int. Cl.**

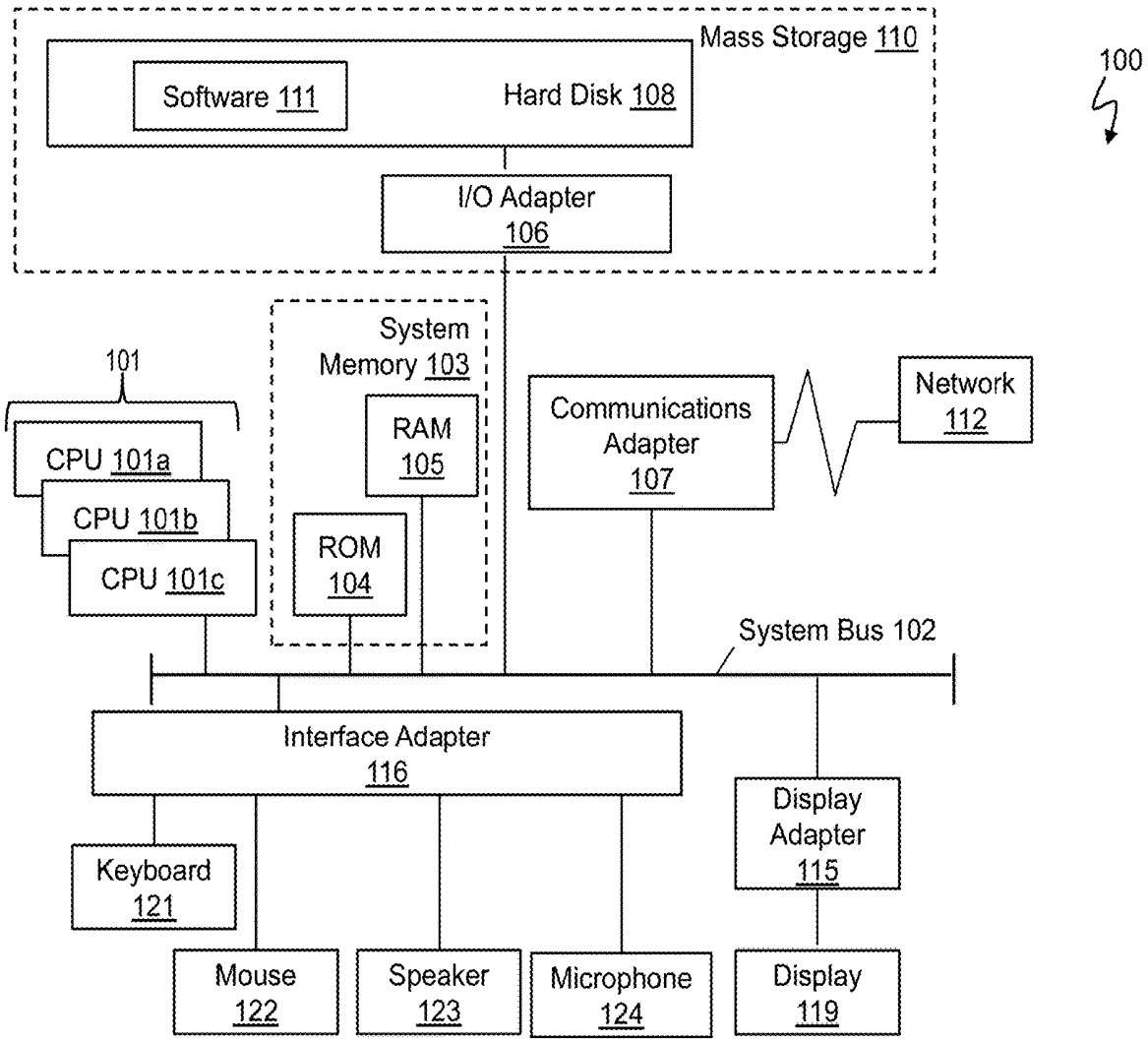
H04L 41/0869	(2006.01)
H04L 41/0604	(2006.01)
H04L 41/16	(2006.01)

(52) **U.S. Cl.**

CPC ***H04L 41/16*** (2013.01); ***H04L 41/0609*** (2013.01); ***H04L 41/0866*** (2013.01)

(57) **ABSTRACT**

Embodiments relate to providing self-learning automated information technology change risk prediction. A processor inputs a change request to a first machine learning model, the first machine learning model determining at least one word pair in the change request, the change request being a modification in an IT environment. The processor classifies the at least one word pair into a change category for the IT environment using a second machine learning model, the change category identifying a type of the modification to be executed in the IT environment. The processor determines a likelihood of causing a problem in the IT environment as a result of executing the modification. The processor automatically performs an action to prevent the modification of the change request in the IT environment.



US 20240412121A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412121 A1**

(43) **Pub. Date: Dec. 12, 2024**

Sanchez

(54) **PERSONAL INFORMATION UTILIZATION FOR COMMUNITY ENHANCEMENT SYSTEM**

(71) Applicant: **Carlos Blanco Sanchez**, Miami, FL (US)

(72) Inventor: **Carlos Blanco Sanchez**, Miami, FL (US)

(21) Appl. No.: **18/736,013**

(22) Filed: **Jun. 6, 2024**

Related U.S. Application Data

(60) Provisional application No. 63/506,644, filed on Jun. 7, 2023.

Publication Classification

(51) **Int. Cl.**

G06Q 10/04	(2006.01)
G06Q 10/1053	(2006.01)
G06Q 50/00	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/04*** (2013.01); ***G06Q 10/1053*** (2013.01); ***G06Q 50/01*** (2013.01)

(57) **ABSTRACT**

A method may include hosting a web application having one or more software modules operating within a network, where the one or more software modules may include at least an input module, an analysis module, an optimization module, and a feedback module. In addition, the method may include controlling access of the one or more software modules to two or more data storage devices via independent data access layers of the network, collecting personal information of community members through the input module, processing the collected data using the analysis module to identify trends, patterns, and opportunities for optimizing personal attributes and community interactions, generating optimization strategies based on the analyzed data using the optimization module, receiving user feedback on the implemented strategies via the feedback module and refining the optimization strategies based on the received feedback to continuously improve and adapt the system to evolving community dynamics.

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(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412133 A1**

(43) **Pub. Date: Dec. 12, 2024**

SHIKAWA et al.

(54) **RESOURCE USAGE AMOUNT MANAGEMENT SYSTEM AND RESOURCE USAGE AMOUNT MANAGEMENT METHOD**

(71) Applicant: **Hitachi, Ltd.**, Tokyo (JP)

(72) Inventors: **Taichi SHIKAWA**, Tokyo (JP); **Motonari HAMANAKA**, Tokyo (JP); **Hiroaki NAKAI**, Tokyo (JP)

(21) Appl. No.: **18/642,868**

(22) Filed: **Apr. 23, 2024**

(30) **Foreign Application Priority Data**

Jun. 9, 2023 (JP) 2023-095798

Publication Classification

(51) **Int. Cl.**

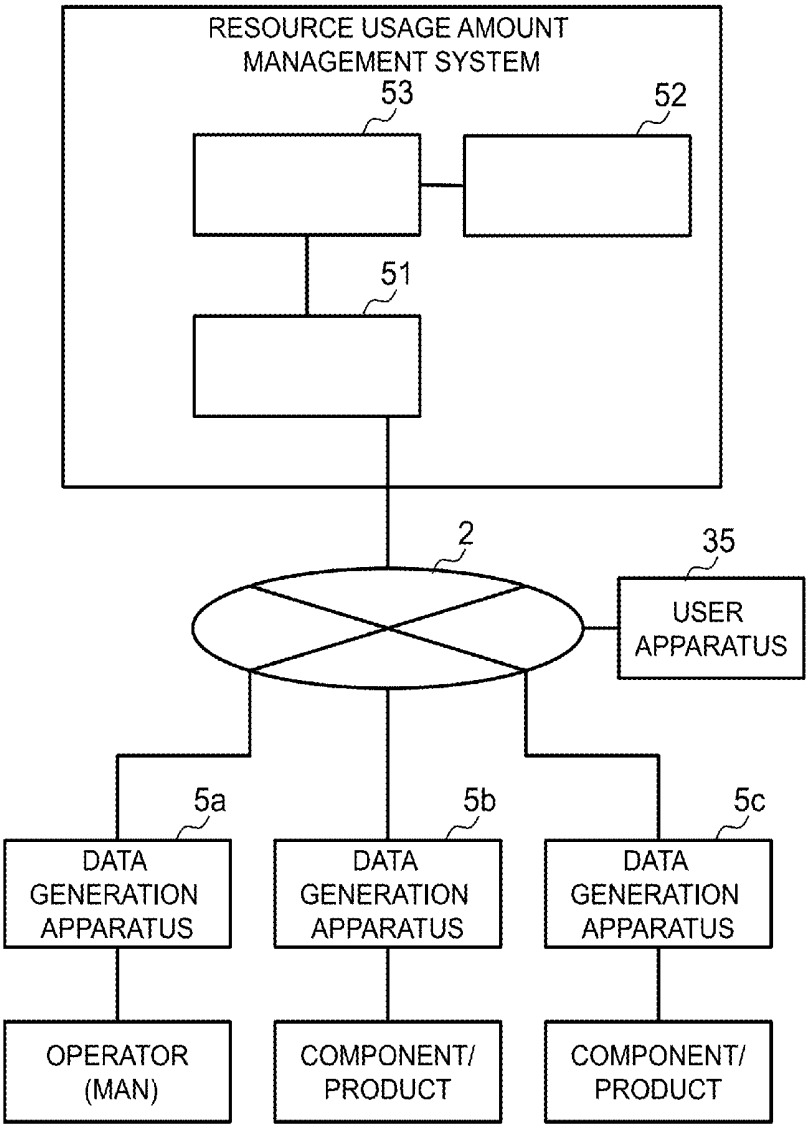
G06Q 10/0631	(2006.01)
G06Q 10/0637	(2006.01)
G06Q 10/0835	(2006.01)

(52) **U.S. Cl.**

CPC . ***G06Q 10/06315*** (2013.01); ***G06Q 10/06375*** (2013.01); ***G06Q 10/0835*** (2013.01)

(57) **ABSTRACT**

A resource usage amount management system stores process management data representing a flow of a plurality of tasks related to production or provision of an item. For each of the tasks, the process management data includes: task information that includes information related to the task with respect to each item related to the task; element information that includes information related to each of a plurality of elements associated with the task, and is associated with the task information on the task; and environment information that includes information related to the resource usage amount for each of the plurality of elements, and is associated with the element information on the element. The resource usage amount management system calculates the resource usage amount in an item-by-item basis, according to information represented by the process management data, and association of information.



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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 December 2024 (12.12.2024)

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(10) International Publication Number
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(51) International Patent Classification:
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G05B 17/02 (2006.01) *G06N 20/00* (2019.01)
G05B 19/418 (2006.01) *G05B 13/04* (2006.01)
G05B 23/02 (2006.01)

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(22) International Filing Date:
15 May 2024 (15.05.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2308529.3 08 June 2023 (08.06.2023) GB

(71) Applicant: **JOHNSON MATTHEY PUBLIC LIMITED COMPANY** [GB/GB]; 5th Floor, 25 Farringdon Street, London EC4A 4AB (GB).

(72) Inventors: **CHALMERS, Alexander James**; c/o Johnson Matthey, Belasis Avenue, Billingham TS23 1LB (GB). **EMERSON, Joseph Thomas**; c/o Johnson Matthey, Blount's Court, Sonning Common RG4 9NH (GB). **FLEMING, Liam Richard**; c/o Johnson Matthey, Belasis Avenue, Billingham TS23 1LB (GB). **STITT, Edmund Hugh**; c/o Johnson Matthey, Belasis Avenue, Billingham TS23 1LB (GB).

(74) Agent: **RIDLAND, John**; c/o Johnson Matthey, PO Box 1, Belasis Avenue, Billingham TS23 1LB (GB).

(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, LY, MA, MD, MG, MK, MN, MU, 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,

(54) Title: A METHOD OF CONTROLLING A CHEMICAL PROCESS

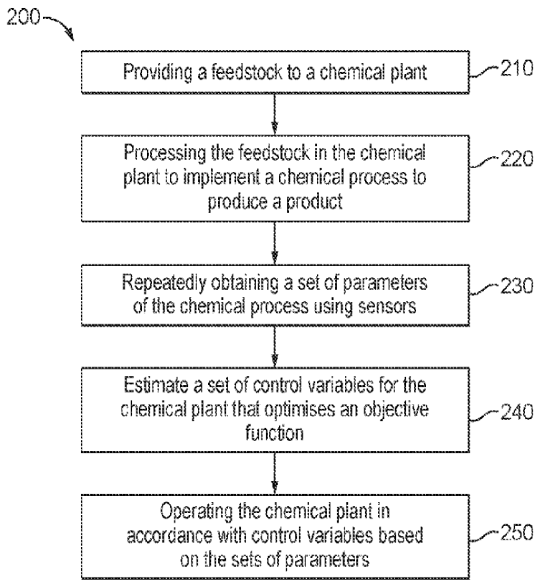


FIG. 2

(57) Abstract: A method of controlling a chemical process is described, comprising: providing a feedstock to a chemical plant; processing the feedstock in the chemical plant to implement a chemical process to produce a product; repeatedly obtaining a set of parameters of the chemical process using sensors; and operating the chemical plant in accordance with control variables based on the sets of parameters by: discarding outliers from the sets of parameters; and simulating the chemical process using the retained sets of parameters to estimate a set of control variables for the chemical plant that optimises an objective function, wherein the step of discarding outliers from the sets of parameters comprises: projecting the sets of parameters into a first lower dimensional space to provide projected parameters; identifying outliers using the projections of the parameters in the first lower dimensional space; and discarding at least some of the sets of parameters corresponding to the outliers.

WO 2024/252123 A1

[Continued on next page]

US 20240408763A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0408763 A1

Sood et al. (43) Pub. Date: Dec. 12, 2024

(54) **TOOL CALIBRATION FOR MANUFACTURING ROBOTS**

(71) Applicant: **Path Robotics, Inc.**, Columbus, OH (US)

(72) Inventors: **Raghav Sood**, Columbus, OH (US); **Colin Bunker**, Columbus, OH (US); **Matthew Klein**, Columbus, OH (US)

(21) Appl. No.: **18/747,432**

(22) Filed: **Jun. 18, 2024**

Related U.S. Application Data

(63) Continuation-in-part of application No. 18/179,796, filed on Mar. 7, 2023.

(60) Provisional application No. 63/317,335, filed on Mar. 7, 2022.

Publication Classification

(51) **Int. Cl.**

B25J 9/16 (2006.01)

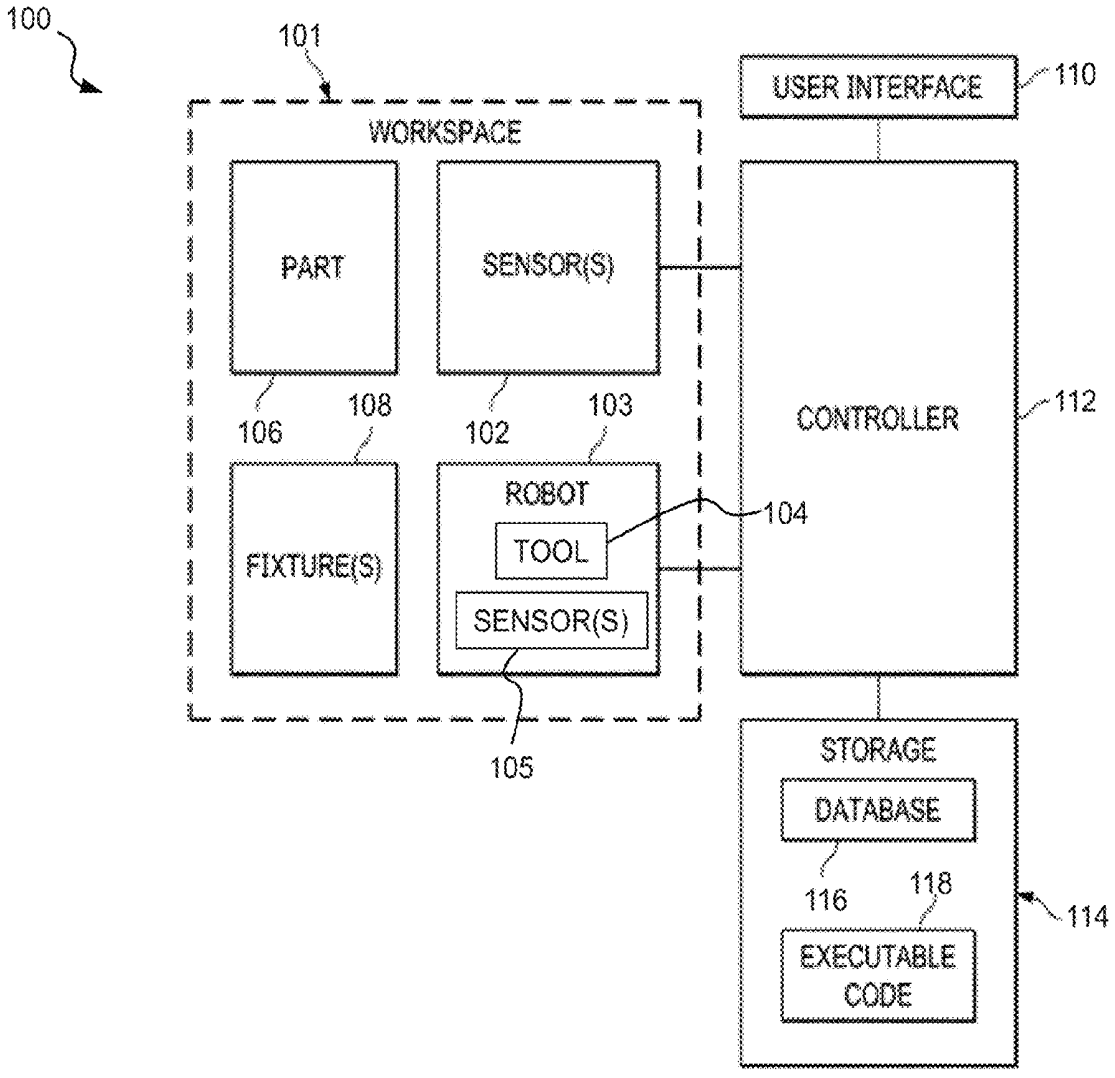
B25J 19/02 (2006.01)

(52) **U.S. Cl.**

CPC ***B25J 9/1692*** (2013.01); ***B25J 9/1697*** (2013.01); ***B25J 19/023*** (2013.01)

(57) **ABSTRACT**

Disclosed are systems, methods, and apparatuses, including computer programs encoded on computer storage media, for operation of a robotic welding system. In one aspect, a method for calibrating a tool center point (TCP) of the robotic welding system includes identifying, based on multiple images, a location of a tip of a protrusion extending from the weldhead. Each image of the multiple images including at least a portion of the protrusion extending from a tip of the weldhead. The tip of the weldhead is associated with a first frame of reference. The method also includes determining, based on the location of the terminal end of the protrusion, a second frame of reference that is offset from the first frame of reference. The method further includes generating one or more TCP calibration values based on the second frame of reference. Other aspects and features are also claimed and described.



US 20240412137A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412137 A1**

(43) **Pub. Date: Dec. 12, 2024**

SAKURAI et al.

(54) **SIMULATION SYSTEM**

(71) Applicant: **TOYOTA JIDOSHA KABUSHIKI KAISHA**, Aichi-ken (JP)

(72) Inventors: **Takahiro SAKURAI**, Nagoya-shi (JP); **Shigefumi TOKUDA**, Susono-shi (JP); **Kensuke MATSUMOTO**, Nagoya-shi (JP); **Masafumi KADOI**, Chita-shi (JP); **Yoshio TAKIZAWA**, Katsushika-ku (JP); **Takumi BAN**, Setagaya-ku (JP); **Ambi SHO**, Nisshin-shi (JP); **Tomoyuki KAGA**, Mishima-shi (JP); **Hideo HASEGAWA**, Nagoya-shi (JP); **Kenta MIYAHARA**, Edogawa-ku (JP); **Shinsuke YAMAUCHI**, Toyata-shi (JP)

(21) Appl. No.: **18/738,067**

(22) Filed: **Jun. 10, 2024**

(30) **Foreign Application Priority Data**

Jun. 12, 2023 (JP) 2023-096273

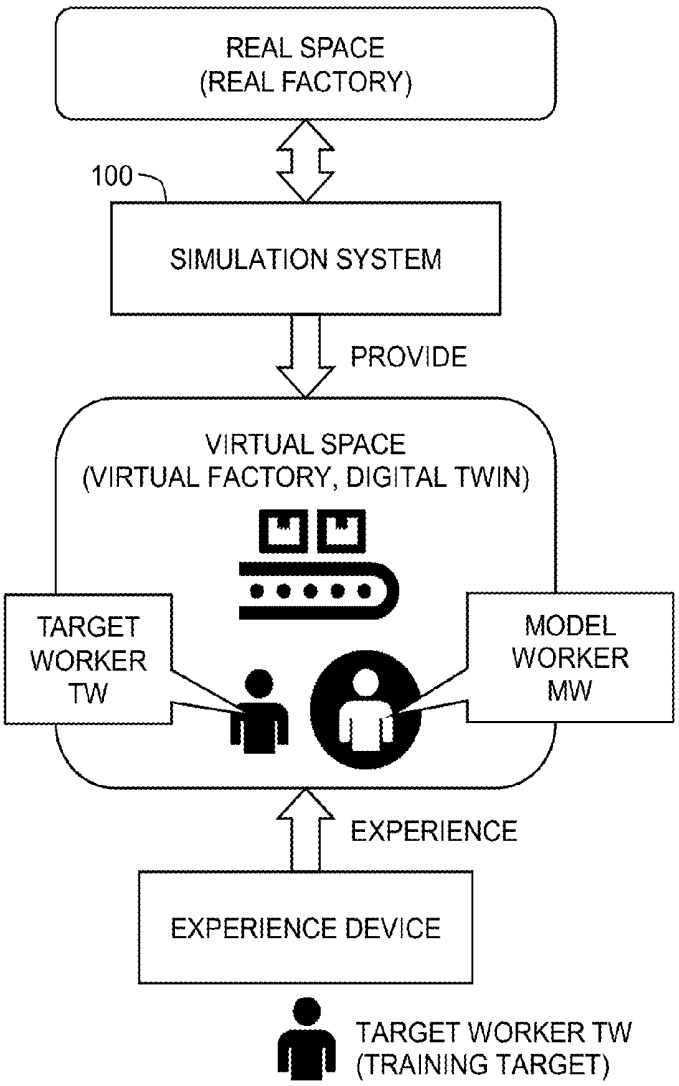
Publication Classification

(51) **Int. Cl.**
G06Q 10/0633 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/0633*** (2013.01)

(57) **ABSTRACT**

A work line includes: a first work carried out by a first target worker; and a second work carried out by a second target worker on a resultant product of the first work. A first model motion is a model motion when the first target worker passes the resultant product of the first work to the second target worker. A second model motion is a model motion when the second target worker receives the resultant product of the first work from the first target worker. When the first target worker carries out the first work in a virtual space, a simulation system draws a first model worker performing the first model motion in the virtual space. When the second target worker carries out the second work in the virtual space, the simulation system draws a second model worker performing the second model motion in the virtual space.



US 20240412152A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2024/0412152 A1**

(43) **Pub. Date: Dec. 12, 2024**

Youn et al.

(54) **HYDROGEN MONITORING APPARATUS AND HYDROGEN MANAGEMENT SYSTEM**

(71) Applicant: **DOOSAN ENERBILITY CO., LTD.**, Changwon (KR)

(72) Inventors: **Ju Young Youn**, Yongin (KR); **Seock Moon Yoon**, Daejeon (KR)

(21) Appl. No.: **18/591,079**

(22) Filed: **Feb. 29, 2024**

(30) **Foreign Application Priority Data**

Jun. 8, 2023 (KR) 10-2023-0073359

Publication Classification

(51) **Int. Cl.**

G06Q 10/0832 (2006.01)

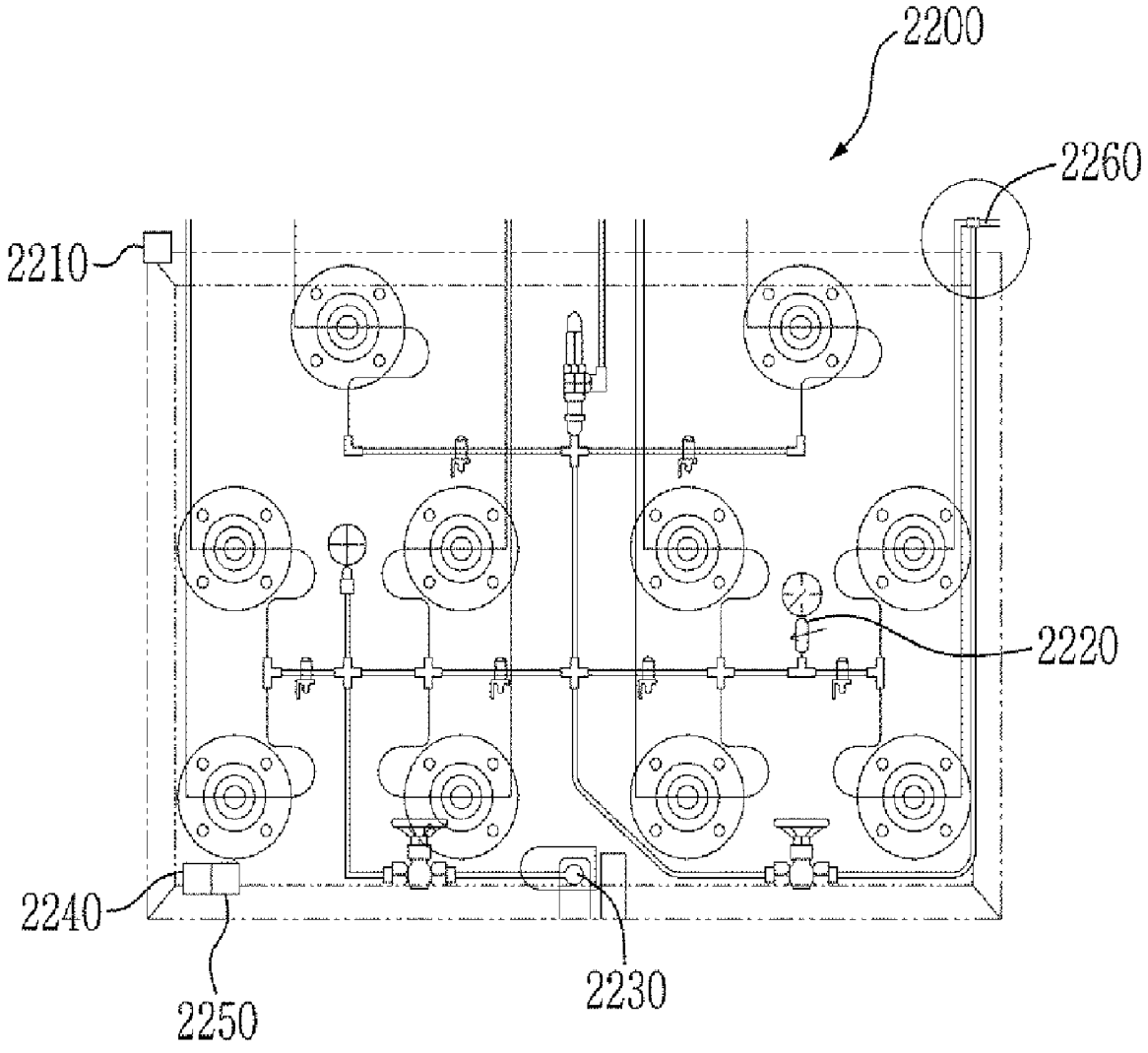
G08B 21/18 (2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 10/0832*** (2013.01); *G08B 21/18* (2013.01)

(57) **ABSTRACT**

Proposed is a hydrogen management system in which location information, pressure information, temperature information, collision information, hydrogen concentration information, and flow rate information are transmitted from sensors mounted in a manifold of each of a plurality of tube trailers (T1, T2, . . .), and the hydrogen consumption amount, the remaining hydrogen amount, the number of users, etc. are transmitted from the plurality of hydrogen charging stations (S1, S2, . . .) so that current hydrogen storage and demand amounts are predicted, thereby managing an entire hydrogen cycle, including hydrogen production, in an integrated manner.



US 20240412125A1

(19) **United States**

(12) **Patent Application Publication**

Howard et al.

(10) **Pub. No.: US 2024/0412125 A1**

(43) **Pub. Date: Dec. 12, 2024**

(54) **MULTI-DIMENSIONAL SKILLS MODEL**

(71) Applicant: **INTERNATIONAL BUSINESS MACHINES CORPORATION**, Armonk, NY (US)

(72) Inventors: **CherylAnne G. Howard**, FALLS CHURCH, VA (US); **Maureen Fitzgerald Norton**, Avon, CT (US); **Jonathan D. Dunne**, Dungarvan (IE); **Slobodan Radenkovic**, Malinovo (SK)

(21) Appl. No.: **18/206,276**

(22) Filed: **Jun. 6, 2023**

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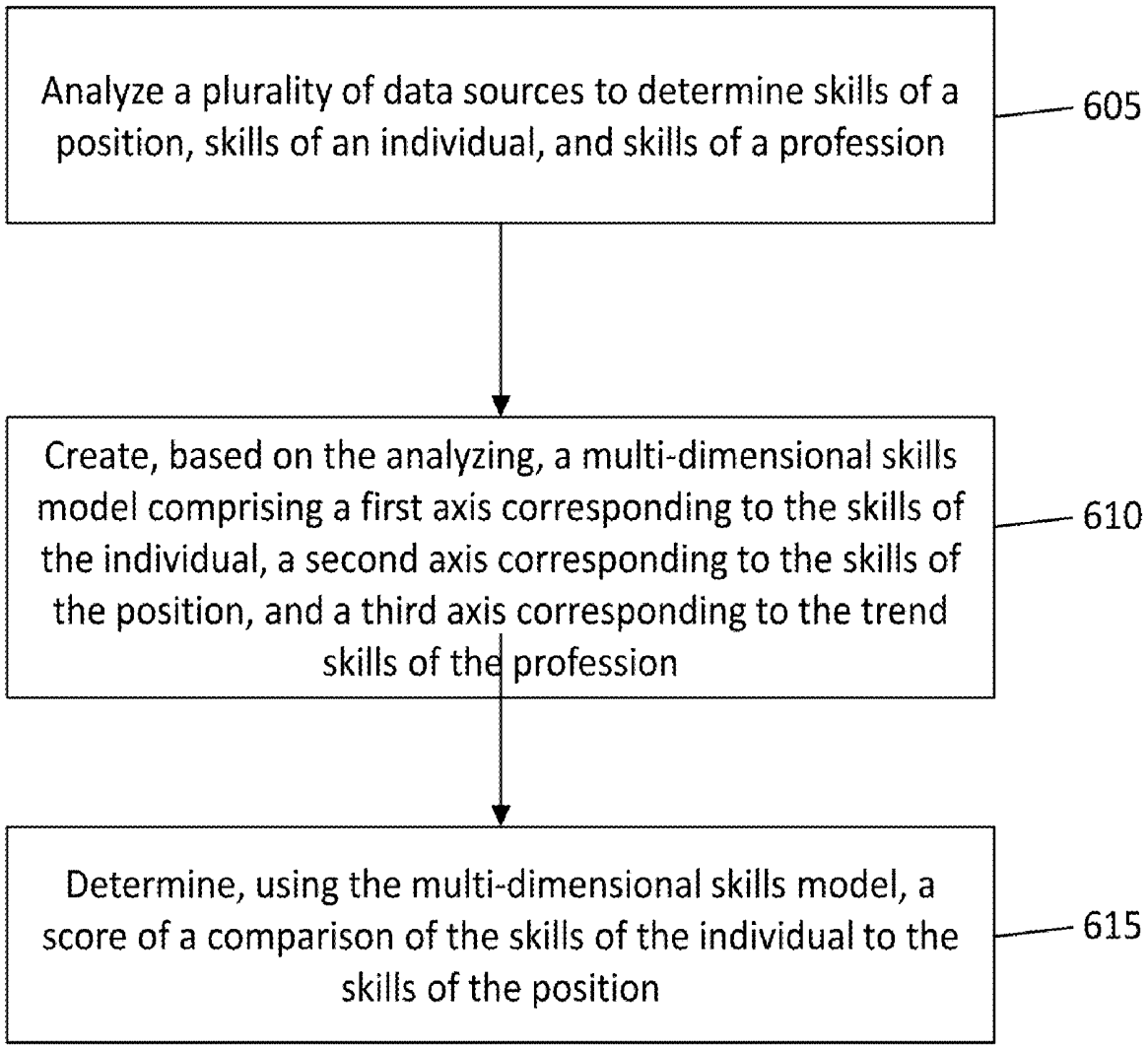
G06Q 10/0631 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/063112*** (2013.01)

(57) **ABSTRACT**

A system, method, and computer program product are configured to: analyze, based on a taxonomy of skills, a plurality of data sources to determine skills of a position, skills of an individual, and trend skills of a profession; create, based on the analyzing, a multi-dimensional skills model comprising a first axis corresponding to the skills of the individual, a second axis corresponding to the skills of the position, and a third axis corresponding to the trend skills of the profession; and determine, using the multi-dimensional skills model, a score of a comparison of the skills of the individual to the skills of the position.



US 20240410623A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0410623 A1**

Ashley et al. (43) **Pub. Date: Dec. 12, 2024**

(54) **SYSTEMS AND METHODS FOR A WIRELESS CASCADING WATER HEATING SYSTEM**

(71) Applicant: **Rheem Manufacturing Company**, Atlanta, GA (US)

(72) Inventors: **Eric William Ashley**, Trabuco Canyon, CA (US); **Hendrik Brinks**, Klazienaveen (NL); **Gerrit Dekker**, Klijndijk (NL)

(21) Appl. No.: **18/208,043**

(22) Filed: **Jun. 9, 2023**

Publication Classification

(51) **Int. Cl.**

F24H 15/464 (2006.01)

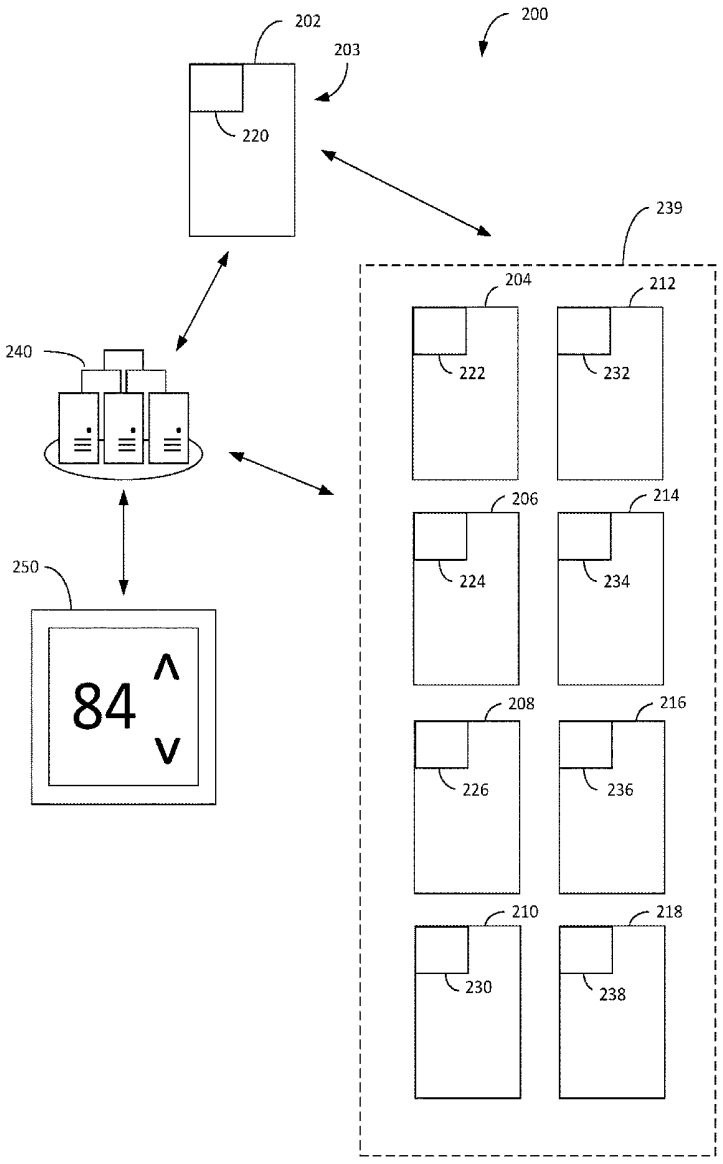
G05B 19/4155 (2006.01)

(52) **U.S. Cl.**

CPC ***F24H 15/464*** (2022.01); ***G05B 19/4155*** (2013.01); *G05B 2219/50333* (2013.01)

(57) **ABSTRACT**

Systems and methods are provided for wireless cascading water heater systems. The wireless cascading water heater system may include several water heaters that may include one or more of a tankless water heater, a boiler, or a combination boiler, for example. One or more of the water heaters may communicate with a remote controller and/or a user device. The water heaters may further be in wireless communication with one another. One water heater may be designated the lead water heater and a second water heater may be designated the backup water heater. The lead water heater may oversee operation of the follower water heaters in response to a hot water demand. A hierarchical order may be determined for selecting which water heaters will respond to hot water demand and in what order. The hierarchical order may be based on the age of the water heater, burn time for the water heater for optimization and efficiency purposes.



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(71) Applicant: **JOHNSON MATTHEY PUBLIC LIMITED COMPANY** [GB/GB]; 5th Floor, 25 Farringdon Street, London EC4A 4AB (GB).

(72) Inventor: **SHELDON, Daniel Thomas**; c/o Johnson Matthey Technology Centre, Princeton Drive, Stockton-on-Tees TS17 6PY (GB).

(74) Agent: **RIDLAND, John**; c/o Johnson Matthey, PO Box 1, Belasis Avenue, Billingham TS23 1LB (GB).

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(54) Title: A METHOD OF MONITORING A CHEMICAL PLANT

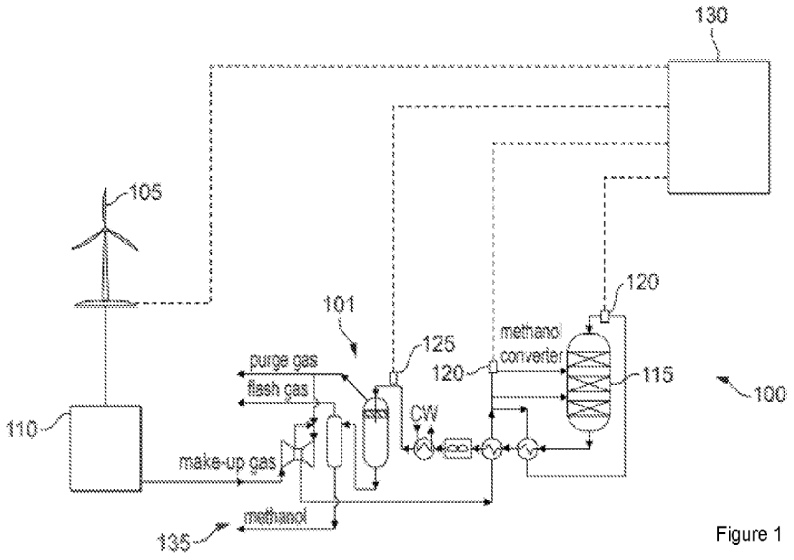

Figure 1

(57) Abstract: A method of monitoring a chemical plant is described, comprising: operating a first chemical plant to implement a chemical process; repeatedly using sensors of the first chemical plant to obtain a set of parameters of the chemical process to produce first sensor data; storing the first sensor data on a remote server; analysing the first sensor data stored on the remote server using a remote controller; and communicating the result of the analysis to a first local controller, wherein analysing the first sensor data stored on the remote server using the remote controller comprises using the first sensor data with a model of at least one component of the first chemical plant to calculate a first parameter of the chemical process.

WO 2024/252122 A1

[Continued on next page]

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(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0408765 A1

ORIDATE et al. (43) Pub. Date: Dec. 12, 2024

(54) **TRAINING OF ARTIFICIAL INTELLIGENCE MODEL**

(71) Applicant: **Wilder Systems Inc.**, Austin, TX (US)

(72) Inventors: **Ademola Ayodeji ORIDATE**, Austin, TX (US); **William WILDER**, Austin, TX (US); **Spencer VOISS**, Austin, TX (US)

(21) Appl. No.: **18/421,141**

(22) Filed: **Jan. 24, 2024**

Related U.S. Application Data

(63) Continuation of application No. 18/447,244, filed on Aug. 9, 2023, now Pat. No. 11,911,921.

(60) Provisional application No. 63/398,202, filed on Aug. 15, 2022, provisional application No. 63/398,203, filed on Aug. 15, 2022, provisional application No. 63/377,149, filed on Sep. 26, 2022, provisional application No. 63/481,563, filed on Jan. 25, 2023, provisional application No. 63/481,576, filed on Jan. 25, 2023, provisional application No. 63/396,938, filed on Aug. 10, 2022.

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(51) **Int. Cl.**

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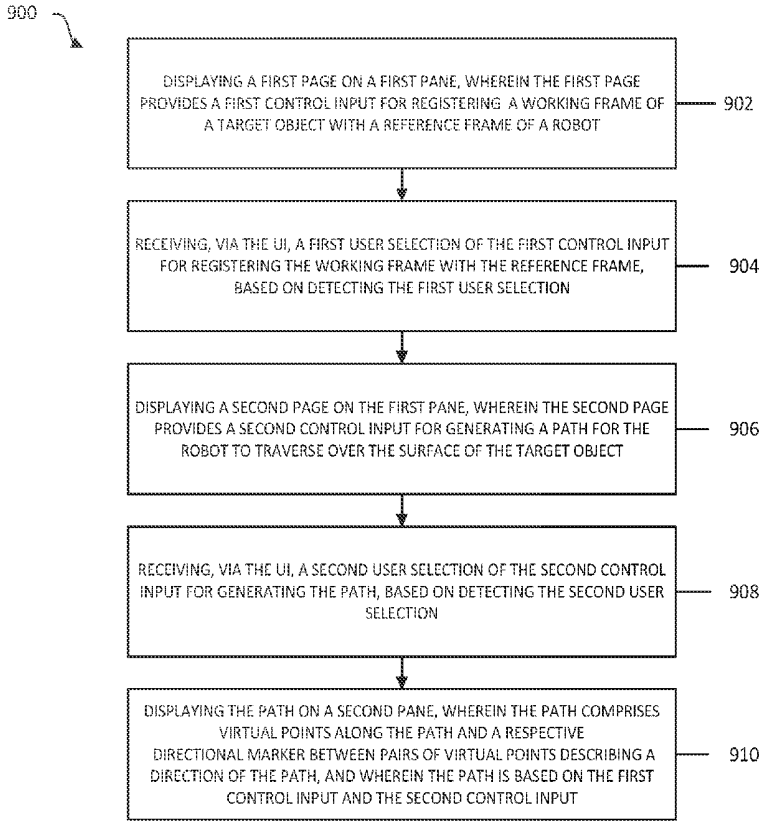
G06F 18/23	(2006.01)
G06T 7/70	(2006.01)

(52) **U.S. Cl.**

CPC ***B25J 9/1697*** (2013.01); ***B25J 9/0081*** (2013.01); ***B25J 9/161*** (2013.01); ***B25J 9/163*** (2013.01); ***B25J 9/1661*** (2013.01); ***B25J 9/1664*** (2013.01); ***B25J 9/1666*** (2013.01); ***B25J 9/1671*** (2013.01); ***B25J 9/1679*** (2013.01); ***B25J 13/006*** (2013.01); ***B64F 5/40*** (2017.01); ***G06F 16/22*** (2019.01); ***G06F 18/23*** (2023.01); ***G06T 7/70*** (2017.01); *G05B 2219/33002* (2013.01); *G05B 2219/45066* (2013.01); *G06T 2207/20081* (2013.01)

(57) **ABSTRACT**

Aspects of the disclosure are directed towards artificial intelligence-based modeling of target objects, such as aircraft parts. In an example, a system initially trains a machine learning (ML) model based on synthetic images generated based on multi-dimensional representation of target objects. The same system or a different system subsequently further trains the ML model based on actual images generated by cameras positioned by robots relative to target objects. The ML model can be used to process an image generated by a camera positioned by a robot relative to a target object based on a multi-dimensional representation of the target object. The output of the ML model can indicate, for a detected target, position data, a target type, and/or a visual inspection property. This output can then be used to update the multi-dimensional representation, which is then used to perform robotics operations on the target object.



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(19) **United States**

(12) **Patent Application Publication**

Bouchet et al.

(10) **Pub. No.: US 2024/0414874 A1**

(43) **Pub. Date: Dec. 12, 2024**

(54) **ROBOT CONTROLLER CABINET AND ROBOT COMPRISING SUCH A CABINET**

(71) Applicant: **STAUBLI FAVERGES**, Faverges-Seythenex (FR)

(72) Inventors: **Corentin Bouchet**, Faverges-Seythenex (FR); **Germano Anni**, Manerbio (bs) (IT); **Benoit Salleyrette**, Doussard (FR)

(21) Appl. No.: **18/736,824**

(22) Filed: **Jun. 7, 2024**

(30) **Foreign Application Priority Data**

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H05K 7/20 (2006.01)

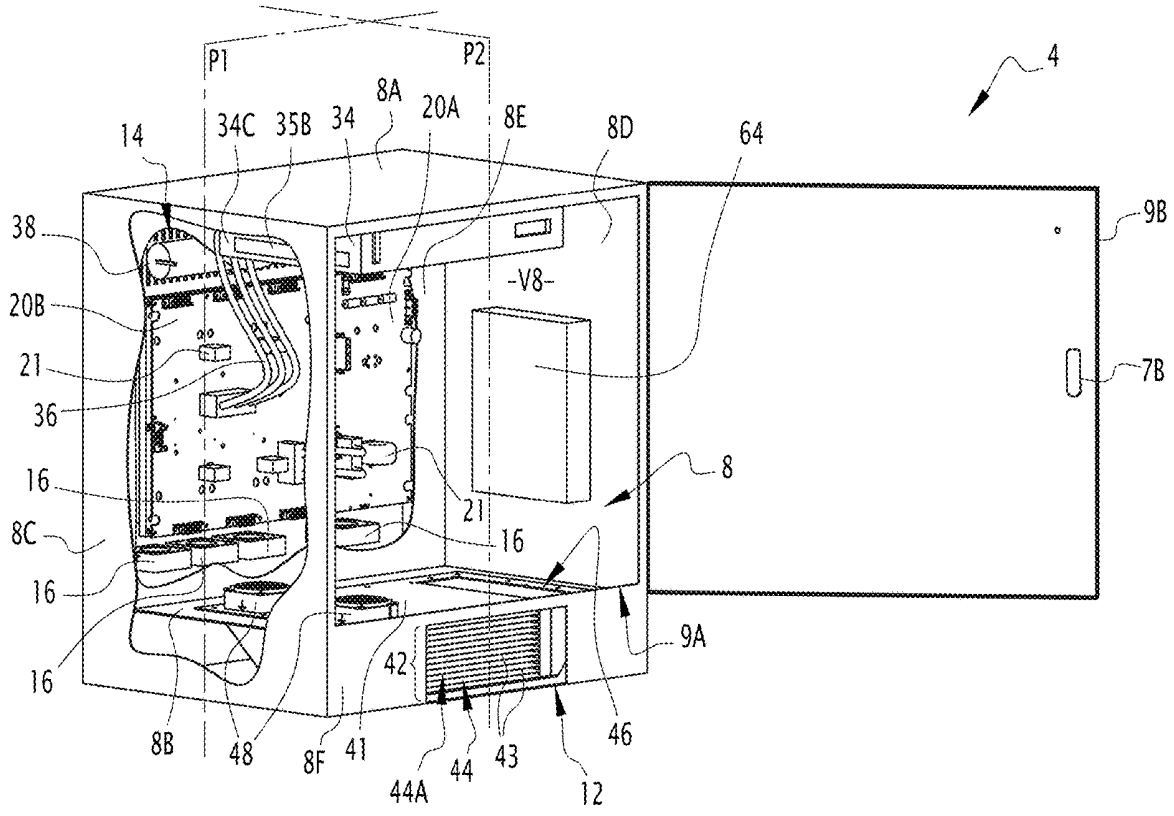
B25J 9/00 (2006.01)

(52) **U.S. Cl.**

CPC ***H05K 7/20154*** (2013.01); *B25J 9/00* (2013.01)

(57) **ABSTRACT**

Robot controller cabinet and robot including such a cabinet. The disclosure relates to a robot controller cabinet including a chamber. First and second electronic units include an electronic component with a high heat flux and with a moderate heat flux, respectively. A cooling channel includes a fan and an inlet provided on a front side of the cabinet. An air-to-component heat exchanger supporting a cooling element. The disclosure also relates to an air-air cross-flow exchanger arranged in the channel and includes a first cooling circuit with an inlet and an outlet passing through a bottom panel of the chamber and second cooling circuit with a parallel inlet and outlet. The inlet is opposite the inlet of the channel. A fan, generating in the first cooling circuit an airflow perpendicular to an airflow generated in the second cooling circuit by the fan of the channel.



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( ) **Demande(s) d'extension :**

(71) **Demandeur(s) :** *SUEZ INTERNATIONAL Société par Actions Simplifiée à associé Unique (SASU)* — FR.

(72) **Inventeur(s) :** SAKAROVITCH Charlotte et LECLERC Cyril.

(73) **Titulaire(s) :** SUEZ INTERNATIONAL Société par Actions Simplifiée à associé Unique (SASU).

(74) **Mandataire(s) :** Cabinet Lavoix.

(54) Méthode, outil et système de prévision de disponibilité de la ressource en eau.

(57) Méthode de prévision de disponibilité de la ressource en eau à un instant de calcul, à partir de données d'entrée de précipitations sur un intervalle de temps prédéterminé et de données historiques enregistrées sur une période historique antérieure audit instant donné, lesdites données historiques étant constituées de données d'entrée de précipitations et éventuellement d'évapotranspiration et de données de sortie de débit d'eau. La méthode combine :

- un modèle conceptuel à réservoirs pluie-débit, modèle dont les paramètres sont calibrés pour coïncider avec les données historiques,
- un modèle à apprentissage automatique, dont l'apprentissage a été effectué sur la base des données historiques d'entrée de précipitations et de données de sortie constituées d'un écart constaté entre :

a) une prévision rétrospective de débit fournie par le modèle conceptuel à réservoir calibré sur les données historiques, à chaque instant de la période historique,

b) le débit d'eau enregistré au même instant de la période historique,

La prévision consiste à

- obtenir, du modèle conceptuel à réservoir calibré sur les données historiques, une prévision provisoire de débit à l'instant de calcul, à partir des données d'entrée de précipitations sur l'intervalle de temps prédéterminé,
- obtenir, du modèle à apprentissage automatique, une prévision de correction au même instant de calcul et à partir des mêmes données d'entrée sur l'intervalle de temps prédéterminé,
- combiner la prévision provisoire et la prévision de correction pour obtenir une prévision de débit.

L'invention concerne également un outil et un système de prévision.

Figure pour l'abrégé : aucune

FR 3 149 705 - A1

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(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0412131 A1**

WICAKSONO et al. (43) **Pub. Date: Dec. 12, 2024**

(54) **CONTACT CENTER WORKLOAD FORECASTS COVERING VARYING TIMESERIES GRANULARITIES AND OPERATING HORIZONS**

(71) Applicant: **GENESYS CLOUD SERVICES, INC.**, MENLO PARK, CA (US)

(72) Inventors: **BAYU AJI WICAKSONO**, MENLO PARK, CA (US); **WEI XUN TER**, MENLO PARK, CA (US); **CHRISTOPHER E. JOHNSON**, MENLO PARK, CA (US); **DANIEL J. CHAPDELAINE**, MENLO PARK, CA (US); **CHARLES DAVID FICO**, MENLO PARK, CA (US); **VIDIT MEHTA**, MENLO PARK, CA (US)

(73) Assignee: **GENESYS CLOUD SERVICES, INC.**, MENLO PARK, CA (US)

(21) Appl. No.: **18/207,344**

(22) Filed: **Jun. 8, 2023**

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(51) **Int. Cl.**
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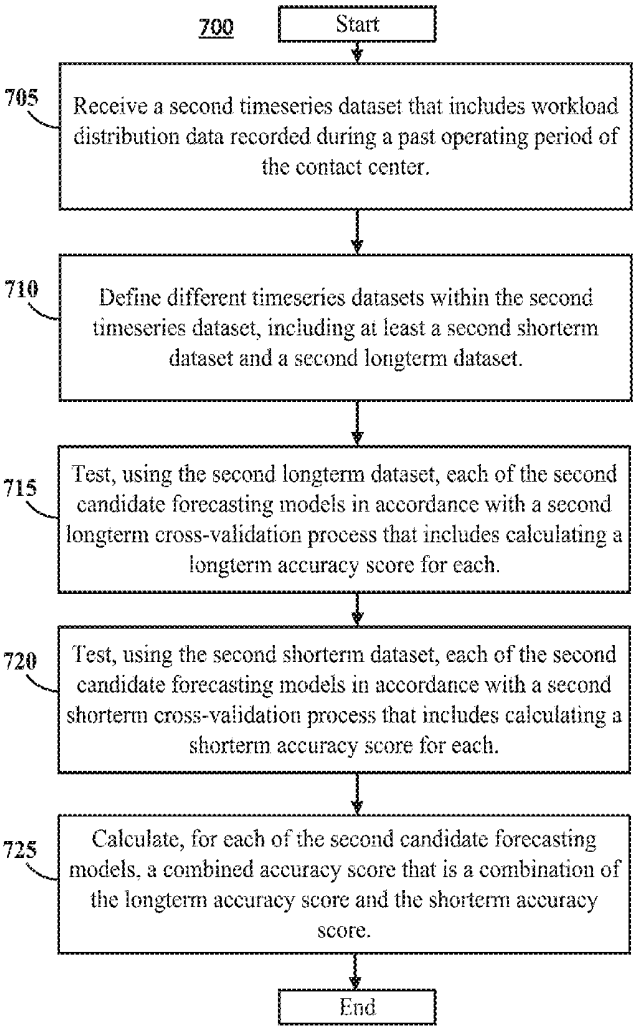
G06Q 10/04 (2006.01)

(52) **U.S. Cl.**
CPC ***G06Q 10/06312*** (2013.01); ***G06Q 10/04*** (2013.01)

(57) **ABSTRACT**

A method for selecting forecasting models for generating timeseries workload forecasts for a contact center covering varying timeseries granularities and operating horizons. The method includes selecting, via a first selection process, a first select forecasting model from first candidate forecasting models for forecasting a workload level in accordance with a lower-granularity timeseries. The first selection process may include the steps of: receiving a first timeseries dataset; defining different timeseries datasets within the first time-series dataset, including a first shorterm dataset and first longterm dataset; testing, using the first longterm dataset, each first candidate forecasting model in accordance with a first longterm cross-validation process; testing, using the first shorterm dataset, each first candidate forecasting model in accordance with a first shorterm cross-validation process; and calculating, for each of the first candidate forecasting models, an combined accuracy score based on the testing.



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(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0412130 A1

WICAKSONO et al. (43) Pub. Date: Dec. 12, 2024

(54) SINGLE MODEL WORKLOAD FORECASTS COVERING BOTH LONGTERM AND SHORTERM CONTACT CENTER OPERATING HORIZONS

(71) Applicant: **GENESYS CLOUD SERVICES, INC.**, MENLO PARK, CA (US)

(72) Inventors: **BAYU AJI WICAKSONO**, MENLO PARK, CA (US); **WEI XUN TER**, MENLO PARK, CA (US); **CHRISTOPHER E. JOHNSON**, MENLO PARK, CA (US); **DANIEL J. CHAPDELAINE**, MENLO PARK, CA (US); **CHARLES DAVID FICO**, MENLO PARK, CA (US); **VIDIT MEHTA**, MENLO PARK, CA (US)

(73) Assignee: **GENESYS CLOUD SERVICES, INC.**, MENLO PARK, CA (US)

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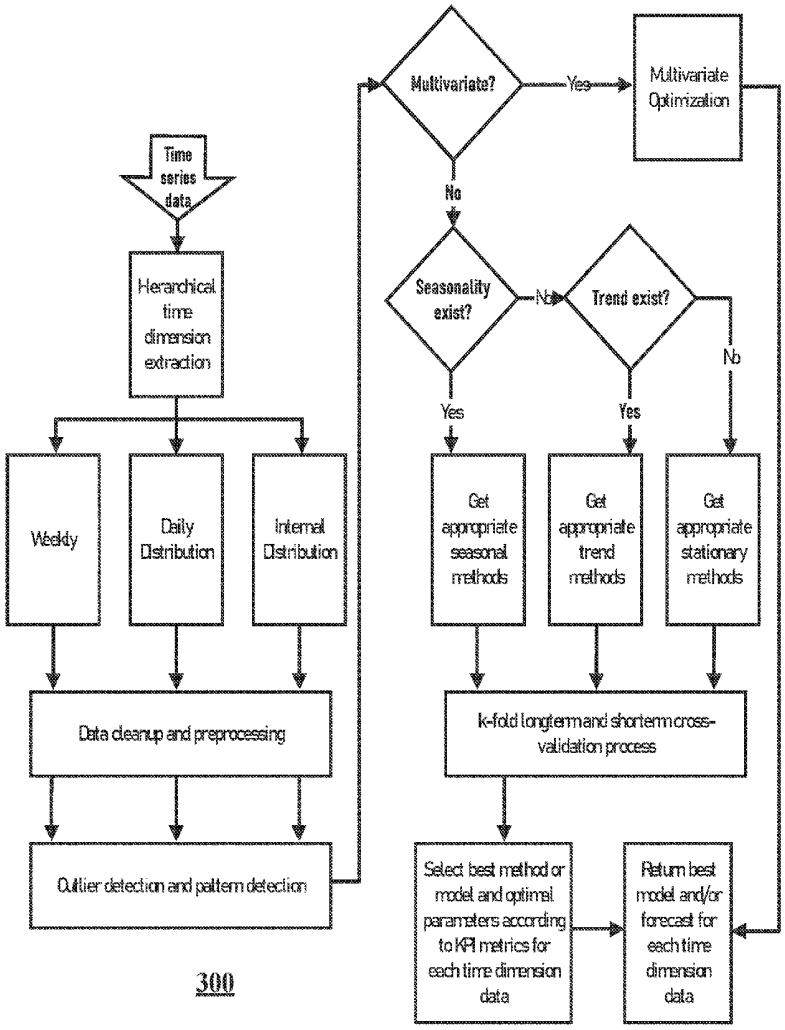
G06Q 10/0637 (2006.01)
G06Q 10/1053 (2006.01)

(52) **U.S. Cl.**

CPC . ***G06Q 10/06312*** (2013.01); ***G06Q 10/06375*** (2013.01); ***G06Q 10/1053*** (2013.01)

(57) **ABSTRACT**

A method for determining a select forecasting model from among candidate forecasting models for improving workload forecasts generated by a single forecasting model that cover both longterm and shorterm operating horizons. The method may include: receiving a timeseries dataset having values associated with operational metrics of a contact center; receiving the candidate forecasting models, each of the candidate forecasting models configured to receive values of the input operational metrics and calculate therefrom a forecasted value for a value of a target operational metric; using the timeseries dataset to test each of the candidate forecasting models in accordance with a cross-validation process; and selecting the select forecasting model from among the candidate forecasting models based on comparing accuracy scores calculated for the candidate forecasting models as part of the cross-validation process.



US 20240412313A1

(19) **United States**

(12) **Patent Application Publication**

Wheeler et al.

(10) **Pub. No.: US 2024/0412313 A1**

(43) **Pub. Date: Dec. 12, 2024**

(54) **SYSTEM AND METHOD FOR CAREER DEVELOPMENT**

(71) Applicant: **STATE FARM MUTUAL AUTOMOBILE INSURANCE COMPANY**, Bloomington, IL (US)

(72) Inventors: **Ross Wheeler**, Scottsdale, AZ (US); **Jose Ivan Gutierrez**, Laveen, AZ (US); **Lauren Mitchell**, Phoenix, AZ (US); **Anthony Welcome**, Mesa, AZ (US); **Steve Amancha**, Tempe, AZ (US)

(21) Appl. No.: **18/377,173**

(22) Filed: **Oct. 5, 2023**

Related U.S. Application Data

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Publication Classification

(51) **Int. Cl.**

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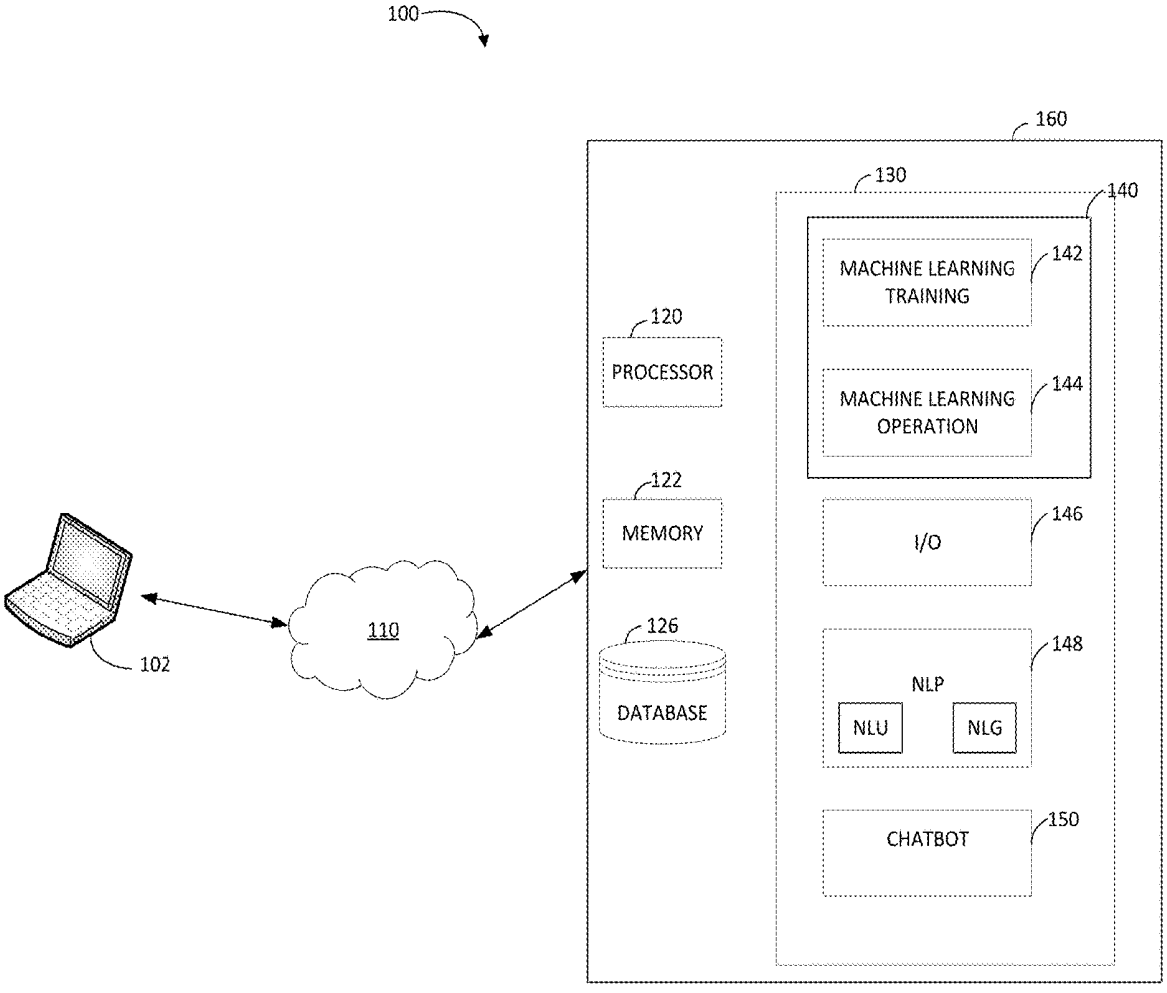
G06N 3/006	(2006.01)
G06N 5/022	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 50/2057*** (2013.01); ***G06N 3/006*** (2013.01); ***G06N 5/022*** (2013.01)

(57) **ABSTRACT**

Apparatuses, systems, and methods are provided for career development are provided. The method comprises: (1) receiving, by one or more processors from a user device, an information element associated with a user; (2) generating, by the one or more processors via a chatbot, career development suggestions based upon the information element associated with the user; and/or (3) presenting, by the one or more processors to the user via the user device, the career development suggestions. The chatbot may implement a trained model.



(19) Deutsches Patent- und Markenamt

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(43) Offenlegungstag: **12.12.2024**

(51) Int Cl.: ***A41H 43/02*** (2006.01)

(71) Anmelder:
Silana GmbH, Wien, AT

(74) Vertreter:
Dilg, Haeusler, Schindelmann Patentanwaltsgesellschaft mbH, 80636 München, DE

(72) Erfinder:
Mayr, Michael, Wien, AT; Hofmannrichter, Michael, Baden, AT; Wohlgemuth, Anton, Stainz, AT; Hunziker, Urs, Meilen, CH

(56) Ermittelter Stand der Technik:

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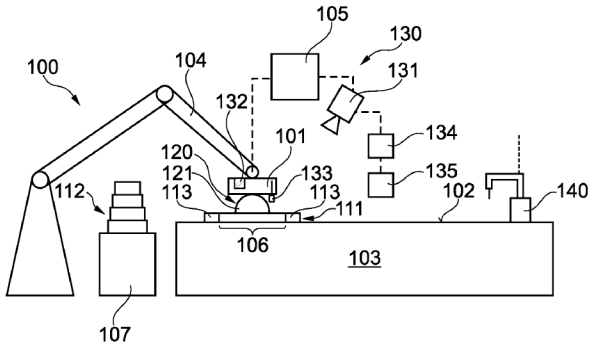
DE	**42 29 955**	**A1**
DE	**10 2012 019 958**	**A1**
DE	**10 2017 118 946**	**A1**
DE	**87 17 528**	**U1**
US	**4 498 404**	**A**
WO	**2023/ 057 368**	**A1**

Prüfungsantrag gemäß § 44 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen.

(54) Bezeichnung: **System zur Vereinzelung von Stofflagen**

(57) Zusammenfassung: Die vorliegende Erfindung betrifft ein System zum Handhaben und Verarbeiten von Stofflagen (111). Das System weist einen Handhabungsroboter (100) mit einem Effektor (101) zum Handhaben von Stofflagen (111) auf, wobei der Effektor (101) eine Handhabungsmechanik (120) aufweist, die ausgebildet ist, zumindest eine Stofflage (111) aufzunehmen und abzulegen. Die Handhabungsmechanik (120) weist eine Effektorkontur (106) auf, wobei innerhalb der Effektorkontur (106) die Stofflage (111) befestigbar ist, wobei die Effektorkontur (106) kleiner als eine Außenkontur der Stofflage (111) ist. Die Handhabungsmechanik (120) ist derart konfiguriert, zumindest eine Stofflage (111) einzeln aus einem Stofflagenstapel (112) zu vereinzeln und aufzunehmen, zumindest eine vereinzelte Stofflage (111) auf einer Arbeitsfläche (102) eines Arbeitstisches (103) flach abzulegen, und die Stofflage (111) innerhalb der Effektorkontur (106) faltenfrei aufzuspannen. Ferner weist das System eine Überwachungsvorrichtung (130) auf, welche konfiguriert ist zur Überwachung der Vereinzelung der zumindest einen Stofflage (111) von dem Stofflagenstapel (112).



US 20240408756A1

(19) **United States**

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BONO et al.

(54) **SYSTEMS AND METHODS FOR SPATIAL REPRESENTATIONS FOR NAVIGATION WITHOUT RECONSTRUCTION**

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G06T 7/20	(2006.01)

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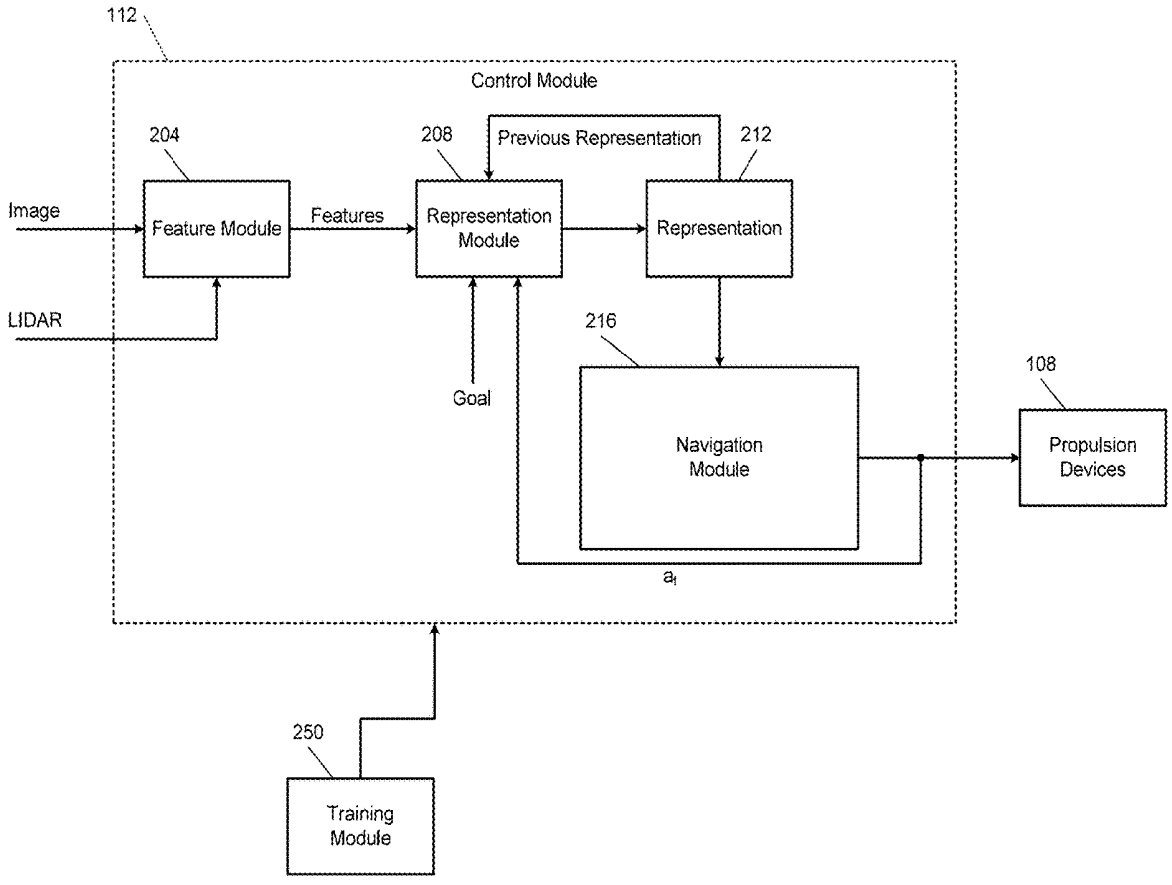
CPC ***B25J 9/1666*** (2013.01); ***B25J 9/1697*** (2013.01); ***G01S 17/89*** (2013.01); ***G06T 7/20*** (2013.01); *G06T 2207/20081* (2013.01); *G06T 2207/20084* (2013.01)

(57) **ABSTRACT**

A learning system for a navigating robot includes: a navigation module including: a first policy configured to determine actions for moving the navigating robot and navigating from a starting location to an ending location based on images from a camera of the navigating robot; and a second policy configured to, based on a representation of an environment generated by the navigating robot, determine actions for moving the navigating robot from waypoint locations between the starting location and the ending location to a plurality of subgoal locations without any images from the camera; and a representation module configured to: selectively learn the representation during movement via the first policy based on the representation at previous times, images from the camera, and actions determined by the first policy at previous times; and provide the representation to the second policy.



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Stavarache et al.

(54) **AI-BASED INTELLIGENT WORKFLOW IMPROVEMENT**

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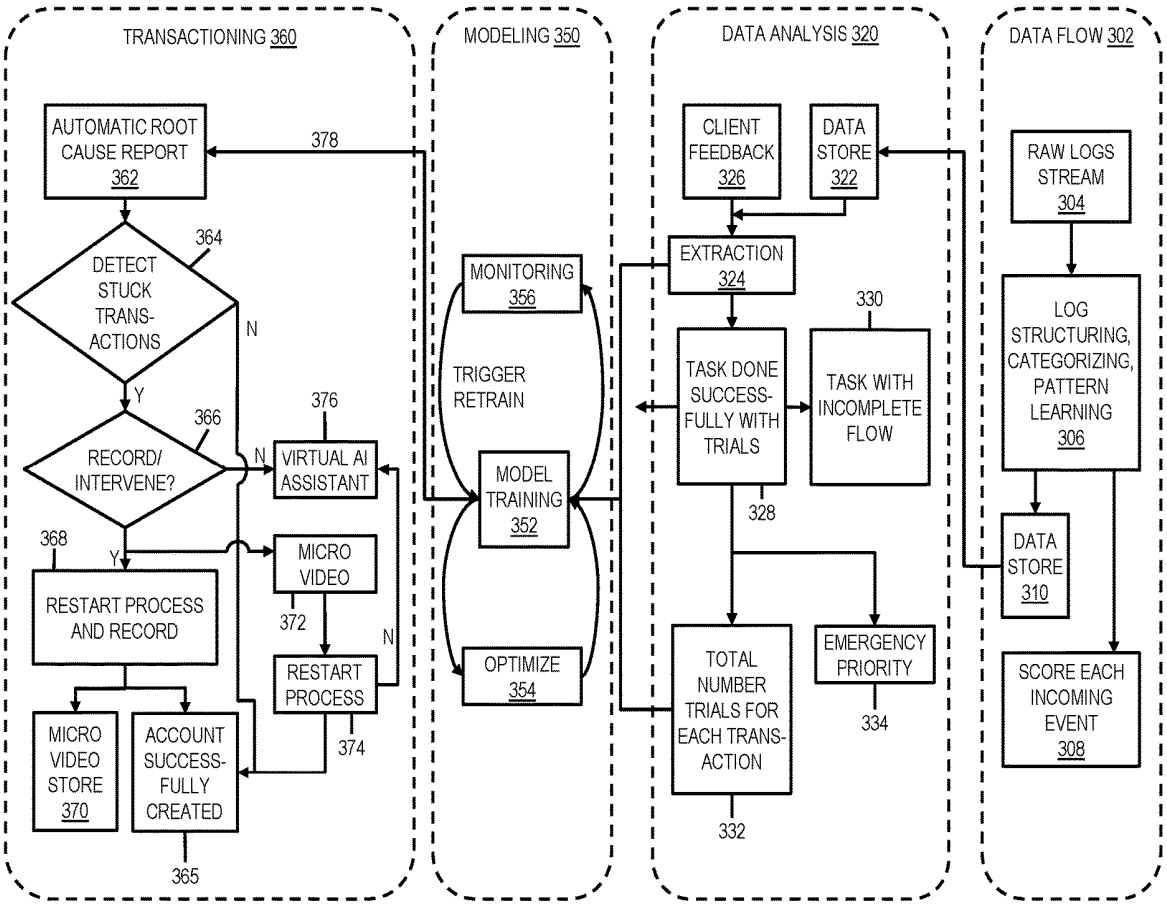
CPC ***G06Q 10/06316*** (2013.01); ***G06N 20/00*** (2019.01)

(57) **ABSTRACT**

A process for artificial intelligence (AI)-based intelligent workflow improvement monitors and records progressions of users through an intelligent workflow (IW). The IW includes computerized activities through which the users progress through interactions with the IW via graphical user interfaces. The process extracts features of the monitored and recorded progressions as reflected by the stored data records. The process builds and trains at least one AI model using the extracted features. The process generates, using the at least one AI model, customized recommendations for improvement of the IW. The customized recommendations include a training action for presentation to a user progressing though the IW. The process also outputs the customized recommendations. The outputting includes dynamically presenting the training action to the user on a graphical user interface through which the user interacts with the IW as part of progressing through the IW.



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Shrader

(54) **APPARATUS AND METHOD FOR GENERATING A SKILL PROFILE**

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(21) Appl. No.: **18/206,156**

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(52) **U.S. Cl.**

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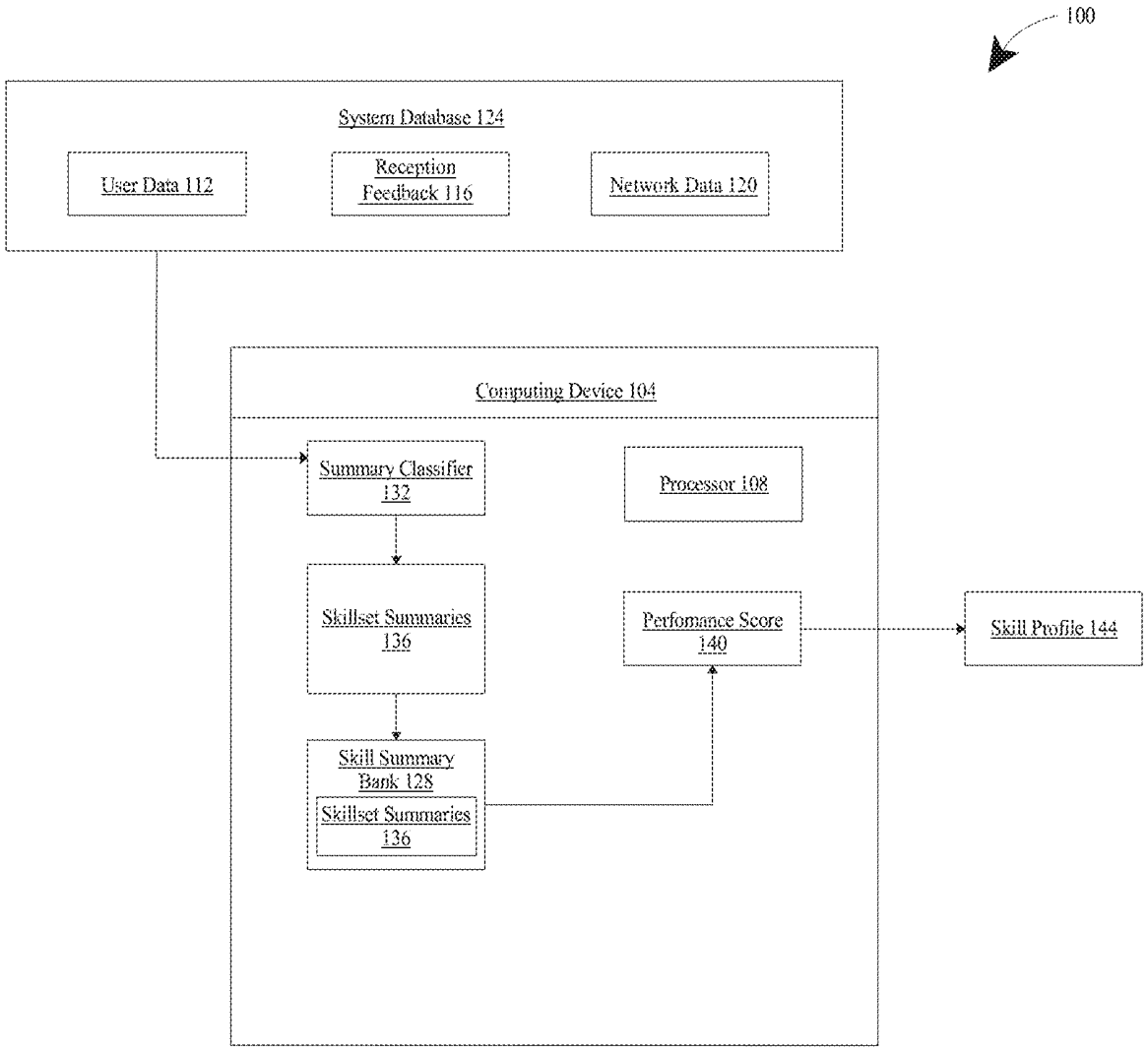
(57) **ABSTRACT**

An apparatus and method for generating a skill profile, the apparatus including at least a processor and a memory communicatively connected to the processor, the memory containing instructions configuring the processor to receive user data including a plurality of skillsets, receive reception feedback, retrieve network data utilizing a web crawler, generate a plurality of skillset summaries as a function of the user data and reception feedback, generate a skill summary bank including the plurality of skillset summaries, generate a performance score for each skillset summary in the skill summary bank, rank the plurality of skillsets summaries based on the performance score and network data, and generate a skill profile based on the ranked plurality of skillset summaries.



PROSPECTS 5.0

PROSPECTS5-0

PROSPECTS5-0

PROSPECTS5_0

PROSPECTS5-0.EU

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