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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/673,347	11/09/2012	Kresimir MIHIC	T9049-19435US01	8522
74739	7590	07/16/2014	EXAMINER	
MILES & STOCKBRIDGE P.C. Oracle International Corporation 1751 Pinnacle Drive Suite 1500 Tysons Corner, VA 22102-3833			DANNEMAN, PAUL	
			ART UNIT	PAPER NUMBER
			3627	
			NOTIFICATION DATE	DELIVERY MODE
			07/16/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Ipdocketing@MilesStockbridge.com
bgoldsmith@milesstockbridge.com
smevean@milesstockbridge.com

DETAILED ACTION

Status of the Claims

1. This Office Action is in response to the Application filed on 09 November 2012.
2. Claims 1-20 are pending and have been examined in this Office Action.
3. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because the claims as a whole, considering all claim elements both individually and in combination, do not amount to significantly more than an abstract idea. **Claims 1-20** are determined to be directed to the abstract idea of a mathematical relationship or formula. The additional elements or combination of elements in the claims other than the abstract idea per se amount to no more than mere instructions to implement the idea on a computer and/or a recitation of generic computer structure that serves to perform generic computer functions that are well-understood, routine and conventional activities previously known to the pertinent industry. Viewed as a whole, these additional claim elements do not provide meaningful limitations to transform the abstract idea into a patent eligible application of the abstract idea such that the claims amount to significantly more than the abstract idea itself. Therefore, the claims are rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. The rationale for this determination is explained below: The claims are directed to the use of "the use of a linear programming which is a mathematical method for optimizing a solution to an equation given a set of constraints" using a generic computer system. See Supreme Court Decision Alice Corporation Pty. Ltd v. CLS Bank International, et al. ("Alice Corp").

Art Unit: 3627

Claims 15-20 are rejected under 35 U.S.C. 101 because the limitations recite a system per se which may be equated to that of interconnected devices which is defined by its physical structural elements and corresponding functionality. No physical structural elements are recited; the claims are directed to non-statutory subject matter. The bodies of the claims comprise software modules, which are virtual modules not physical structures.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Delurgio et al., US Patent 7,092,896 B2 ("Delurgio") in view of NPL_GAMS and in view of Capek et al., US Patent Publication 2003/0204474 A1 ("Capek").

As per Claims 1-3 and 8-10 regarding "a method for optimizing shelf space placement for an item in a store using Mixed-Integer Linear Programming and outputting a shelf position and a number of

Art Unit: 3627

facings for the item and performance indicators of revenue, profit or sales” Delurgio in at least the ABSTRACT discloses a method for optimizing a promotion plan for merchandising products utilizing a computer-based scenario/results processor within an optimization server based on the fixed and variable costs of the product. Delurgio in at least Fig.3 and Column 8, lines 46-63 discloses an optimization engine 300 which includes a space optimization tool 308. Delurgio in at least Column 8, lines 64-67 and Column 9, lines 1-25 discloses an optimization scenario configured by a user to direct the retrieval and/or upload of data from the client computer and using the space tool 308 to determine an optimum placement strategy within stores for product of a product category comprising a plurality of demand groups. Delurgio in at least Column 6, lines 21-35 discloses using a promotion strategy optimization where the objectives of the promotion may include maximizing volume, revenue, profit or some other merchandising figure of merit. Delurgio does not specifically disclose “using Mixed-Integer Linear Programming” however Delurgio in at least Column 9, lines 14-25 further discloses determining an optimum mix of products of a product category comprising a plurality of demand groups using the optimization engine 300 comprised of computer program modules coded for execution by an optimization analysis program such as GAMS and NPL_GAMS in the first three paragraphs on page 1 discloses the General Algebraic Modeling System (GAMS) as a high-level modeling system for mathematical optimization designed for modeling and solving linear, nonlinear and mixed integer optimization problems. Therefore, it would have been obvious, at the time of the invention, to one of ordinary skill to combine by known methods and to achieve predictable results the well-known elements of Delurgio’s optimization analysis with the equally well-known elements of NPL_GAMS with the motivation to use the latest optimization routines for Mixed Integer Linear Programming.

Regarding “executing a Randomized Search (RS) using the decision variables and the constrains until an RS solution is below a predetermined improvement threshold” Delurgio and NPL_GAMS do not specifically disclose Randomized Search (RS) however Capek in at least paragraph [22] discloses that optimization of two or more constraints may be performed using any one of a number of nontrivial mathematical techniques including inter programming, linear programming, deterministic optimization, priority-based search heuristics, **greedy algorithms**, **randomized algorithms**, local search methods,

Art Unit: 3627

meta-heuristics, tabu search, evolutionary algorithms, genetic algorithms, simulated annealing, agent-based algorithms, portfolio optimization, simulation, stochastic optimization, forecasting analysis. Therefore, it would have been obvious, at the time of the invention, to one of ordinary skill, to combine by known methods and to achieve predictable results the well-known linear programming elements of the combination of Delurgio and NPL_GAMS with the equally well-known elements of Capek's optimization using greedy and randomized algorithms with the motivation to optimize a solution of two or more constraints.

As per Claims 4-5 and 11-12 which depend from Claims 1 and 8 respectively regarding "a vertical blocking attribute and a horizontal boundary attribute" Delurgio in at least Column 9, lines 14-25 further discloses determining an **optimum mix of products of a product category** comprising a plurality of demand groups using the optimization engine 300 comprised of computer program modules coded for execution by an optimization analysis program such as GAMS.

EXAMINER'S NOTE: Applicant's published specification in paragraph [25] discloses that a vertical blocking attribute is a product brand and a horizontal boundary attribute is related to product size.

As per Claims 6 and 13 which depend respectively from Claims 1 and 8 regarding "wherein the constraints comprise at least one of: usable shelf capacity, attribute-based blocking, assortment-based group constraints, placement constraints or shelf uniqueness" Delurgio in at least Fig. 1 and Column 6, lines 21-56 discloses that some of the constraints 103 used in the optimization analysis program include maximizing volume, revenue, profit or some other merchandising figure of merit.

As per Claims 7 and 14 which depend respectively from Claims 1 and 8 regarding "wherein the solving MILP problem using the decision variables and the constraints comprises transforming the RS solution into variable of the MILP problem" Delurgio and NPL_GAMS do not specifically disclose Randomized Search (RS) however Capek in at least paragraph [22] discloses that optimization of two or more constraints may be performed using any one of a number of nontrivial mathematical techniques including inter programming, linear programming, deterministic optimization, priority-based search

Art Unit: 3627

heuristics, **greedy algorithms**, **randomized algorithms**, local search methods, meta-heuristics, tabu search, evolutionary algorithms, genetic algorithms, simulated annealing, agent-based algorithms, portfolio optimization, simulation, stochastic optimization, forecasting analysis. Therefore, it would have been obvious, at the time of the invention, to one of ordinary skill, to combine by known methods and to achieve predictable results the well-known linear programming elements of the combination of Delurgio and NPL_GAMS with the equally well-known elements of Capek's optimization using greedy and randomized algorithms with the motivation to optimize a solution of two or more constraints.

As per Claims 15-16 regarding "a system comprising a randomized searcher, a Mixed-Integer Linear Program solver and a solution module for optimizing shelf space placement for an item in a store using Mixed-Integer Linear Programming and outputting a shelf position and a number of facings for the item and performance indicators of revenue, profit or sales" Delurgio in at least Fig.2 and Column 6, lines 57-67 And Column 7, lines 1-15 discloses an apparatus performing optimization according to the present invention.

Delurgio in at least the ABSTRACT discloses a method for optimizing a promotion plan for merchandising products utilizing a computer-based scenario/results processor within an optimization server based on the fixed and variable costs of the product. Delurgio in at least Fig.3 and Column 8, lines 46-63 discloses an optimization engine 300 which includes a space optimization tool 308. Delurgio in at least Column 8, lines 64-67 and Column 9, lines 1-25 discloses an optimization scenario configured by a user to direct the retrieval and/or upload of data from the client computer and using the space tool 308 to determine an optimum placement strategy within stores for product of a product category comprising a plurality of demand groups. Delurgio in at least Column 6, lines 21-35 discloses using a promotion strategy optimization where the objectives of the promotion may include maximizing volume, revenue, profit or some other merchandising figure of merit. Delurgio does not specifically disclose "using Mixed-Integer Linear Programming" however Delurgio in at least Column 9, lines 14-25 further discloses determining an optimum mix of products of a product category comprising a plurality of demand groups using the optimization engine 300 comprised of computer program modules coded for execution by an

Art Unit: 3627

optimization analysis program such as GAMS and NPL_GAMS in the first three paragraphs on page 1 discloses the General Algebraic Modeling System (GAMS) as a high-level modeling system for mathematical optimization designed for modeling and solving linear, nonlinear and mixed integer optimization problems. Therefore, it would have been obvious, at the time of the invention, to one of ordinary skill to combine by known methods and to achieve predictable results the well-known elements of Delurgio's optimization analysis with the equally well-known elements of NPL_GAMS with the motivation to use the latest optimization routines for Mixed Integer Linear Programming.

Regarding "executing a Randomized Search (RS) using the decision variables and the constrains until an RS solution is below a predetermined improvement threshold" Delurgio and NPL_GAMS do not specifically disclose Randomized Search (RS) however Capek in at least paragraph [22] discloses that optimization of two or more constraints may be performed using any one of a number of nontrivial mathematical techniques including inter programming, linear programming, deterministic optimization, priority-based search heuristics, **greedy algorithms, randomized algorithms**, local search methods, meta-heuristics, tabu search, evolutionary algorithms, genetic algorithms, simulated annealing, agent-based algorithms, portfolio optimization, simulation, stochastic optimization, forecasting analysis. Therefore, it would have been obvious, at the time of the invention, to one of ordinary skill, to combine by known methods and to achieve predictable results the well-known linear programming elements of the combination of Delurgio and NPL_GAMS with the equally well-known elements of Capek's optimization using greedy and randomized algorithms with the motivation to optimize a solution of two or more constraints.

As per Claims 17-18 which depend from Claims 15 regarding "a vertical blocking attribute and a horizontal boundary attribute" Delurgio in at least Column 9, lines 14-25 further discloses determining an **optimum mix of products of a product category** comprising a plurality of demand groups using the optimization engine 300 comprised of computer program modules coded for execution by an optimization analysis program such as GAMS.

Art Unit: 3627

EXAMINER'S NOTE: Applicant's published specification in paragraph [25] discloses that a vertical blocking attribute is a product brand and a horizontal boundary attribute is related to product size.

As per Claim 19 which depend from Claims 15 regarding "wherein the constraints comprise at least one of: usable shelf capacity, attribute-based blocking, assortment-based group constraints, placement constraints or shelf uniqueness" Delurgio in at least Fig. 1 and Column 6, lines 21-56 discloses that some of the constraints 103 used in the optimization analysis program include maximizing volume, revenue, profit or some other merchandising figure of merit.

As per Claim 20 which depend respectively from Claims 15 regarding "wherein the solving MILP problem using the decision variables and the constraints comprises transforming the RS solution into variable of the MILP problem" Delurgio and NPL_GAMS do not specifically disclose Randomized Search (RS) however Capek in at least paragraph [22] discloses that optimization of two or more constraints may be performed using any one of a number of nontrivial mathematical techniques including inter programming, linear programming, deterministic optimization, priority-based search heuristics, **greedy algorithms, randomized algorithms**, local search methods, meta-heuristics, tabu search, evolutionary algorithms, genetic algorithms, simulated annealing, agent-based algorithms, portfolio optimization, simulation, stochastic optimization, forecasting analysis. Therefore, it would have been obvious, at the time of the invention, to one of ordinary skill, to combine by known methods and to achieve predictable results the well-known linear programming elements of the combination of Delurgio and NPL_GAMS with the equally well-known elements of Capek's optimization using greedy and randomized algorithms with the motivation to optimize a solution of two or more constraints.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL DANNEMAN whose telephone number is (571)270-1863. The examiner can normally be reached on Mon.-Thurs. 6AM-5PM Fri. off.

Art Unit: 3627

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Florian Zeender can be reached on 571-272-6790. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PAUL DANNEMAN/
Primary Examiner, Art Unit 3627



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bgoldsmith@milesstockbridge.com
smevean@milesstockbridge.com

Applicant-Initiated Interview Summary	Application No. 13/673,347	Applicant(s) MIHIC ET AL.	
	Examiner PAUL DANNEMAN	Art Unit 3627	

All participants (applicant, applicant's representative, PTO personnel):

- (1) PAUL DANNEMAN. (3) _____.
- (2) BARRY GOLDSMITH, Reg. No. 39,690. (4) _____.

Date of Interview: 14 October 2014.

Type: Telephonic Video Conference
 Personal [copy given to: applicant applicant's representative]

Exhibit shown or demonstration conducted: Yes No.
If Yes, brief description: _____.

Issues Discussed 101 112 102 103 Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 1.

Identification of prior art discussed: _____.

Substance of Interview

(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

We discussed arguments that explained how the RS algorithm and Mixed-Integer Linear Program (MILP) are combined and used to optimize the placement of products on a merchant's shelf based on achieving a key performance indicator (KPI). Regarding the Alice § 101 rejection the Examiner recommended that a positive recitation of determining and outputting a product's shelf position using a processor might be sufficient to overcome the rejection.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Attachment

/PAUL DANNEMAN/
Primary Examiner, Art Unit 3627