# UNITED STATES PATENT AND TRADEMARK OFFICE

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| 16/420,943 | 05/23/2019 | Yanfu LI | 100601-1340 | 9186 |

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| EXAMINER |
|---|
| KAZIMI, OMAR H |

| ART UNIT | PAPER NUMBER |
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| 3625 | |

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**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):

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| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 16/420,943 | LI et al. |
| | Examiner | Art Unit | AIA (FITF) Status |
| | OMAR H KAZIMI | 3625 | Yes |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTHS FROM THE MAILING
DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☑ Responsive to communication(s) filed on <u>29 March 2021</u>.
  ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.**          2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims***

5) ☑ Claim(s) <u>1-3,6-8 and 11-24</u> is/are pending in the application.

  5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) <u>1-3,6-8 and 11-24</u> is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined <u>allowable</u>, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

**Application Papers**

10)☑ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or  b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  **Certified copies:**

    a)☑ All      b)☐ Some**    c)☐ None of the:

      1.☑ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☑ Notice of References Cited (PTO-892)                    3) ☐ Interview Summary (PTO-413)
                                                                Paper No(s)/Mail Date _____.
2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)    4) ☐ Other: _____.
   Paper No(s)/Mail Date _____.

**DETAILED ACTION**

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16th, 2013, is being examined under the first

inventor to file provisions of the AIA.

***Continued Examination under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR

1.17(e), was filed in this application after final rejection. Since this application is eligible for continued

examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality

of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed

on March 29th, 2021 has been entered.

The following is a Non-Final office action on the merits in response to the communication filed

on March 29th, 2021. Claims 1-3, 6-8 and 11-24 are currently pending. The objections and rejections are

as stated below.

***Status of Claims***

Claims 4, 5, 9 and 10 are previously canceled.

Claims 1-3, 6-8 and 11 are currently amended.

Claims 12-24 are newly added.

Claims 1-3, 6-8 and 11-24 are currently pending and have been examined.

### *Priority*

Acknowledgment is made of Applicant's claim for foreign priority under 35 U.S.C. 119 (a)-(d). Receipt is acknowledged of a certified copy required by 37 CFR 1.55. The certified copy has been filed in this application on July 10th, 2019.

A certified translation of every foreign benefit application or Patent Cooperation Treaty (PCT) application not filed in English is required. See 35 U.S.C. 119(b)(3) and 372(b)(3) and 37 CFR 1.55(a)(4). If no certified translation is in the official record for the application, the examiner must require the applicant to file a certified translation. The applicant should provide the required translation if applicant wants the application to be accorded benefit of the non-English language application. Any showing of priority that relies on a non-English language application is prima facie insufficient if no certified translation of the application is on file. See 37 CFR 41.154(b) and 41.202(e). See MPEP § 2304.01(c).

Examiner will attempt to provide art that complies with the foreign priority date that the applicant has filed for; however, should an art be required that interferes with the foreign priority then a translation of the foreign priority will be required in order to perfect the foreign priority.

Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

### *Specification*

The disclosure is objected to because of the following informalities:

In particular, applicants' disclosure, ¶0022 "... information to the s̲ user." should rather be "... information to the user..." and ¶0083 "An input/i̲n̲p̲u̲t̲ (I/O) interface..." should rather be "An input/output (I/O) interface..." Appropriate correction is required.

### *Claim Objections*

**Claim 1-3 and 11-15** are objected to because of the following informalities:

**Claim 1**, line 5 "the server, the server being..." should rather read "the server being..." and line 29 "the display screen, the display screen being..." should rather read "the display screen being...".

**Claims 2, 3 and 11-15** inherit the deficiencies noted in claim 1. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112, Second Paragraph*

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-3 and 11-24 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.**

In particular, **claim 1** recites the limitations "...collect user information..." and "...transmit user information..." in line 3, respectively. It is unclear if the "...user information" in line 3, is the same or

different from one another. For purposes of compact prosecution, Examiner will interpret "...transmit user

information..." line 3, of claim 1 to read as "...transmit the user information...".

        **Claims 2, 3 and 11-15** inherit the deficiencies noted in claim 1. Appropriate correction is required.


        In particular, **claim 1** recites the limitations "...a display screen..." in line 5 and "...a display

screen..." in line 11, respectively. It is unclear if the "...display screen" in line 5 is the same or different

from the "...display screen" in line 11. For purposes of compact prosecution, Examiner will interpret line

11 of claim 1 to read as "...the display screen."

        **Claims 2, 3 and 11-15** inherit the deficiencies noted in claim 1. Appropriate correction is required.


        In particular, **claim 7, 8 and 11** recites the limitations "...user identify information..." It is unclear

if the "...user identify information" of claims 7, 8 and 11, is the same or different from "...user identity

information..." of claim 6. For purposes of compact prosecution, Examiner will interpret "...user identify

information..." of claims 7, 8 and 11 to read as "...user identity information..." Appropriate correction is

required.


        In particular, **claim 16** recites the limitations "...a display screen..." in lines 2-3 and "...a display

screen..." in line 12, respectively. It is unclear if the "...display screen" in lines 2-3 is the same or different

from the "...display screen" in line 12. For purposes of compact prosecution, Examiner will interpret line

12 of claim 16 to read as "...the display screen."

        **Claims 17-24** inherit the deficiencies noted in claim 16. Appropriate correction is required.


        In particular, **claim 1** recites a smart shopping cart system comprising a shopping cart, at least one

of a camera, and a barcode scanner. However it is unclear if the server and the display screen are part of

the system. The metes and bounds of the system are unclear inasmuch as one of ordinary skill in the art

cannot determine how to avoid infringement of this claim because they are not appraised of the system

comprises of, and therefore in order to ensure that the scope of claim is clear and to demarcate the

boundaries of what constitutes infringement of the patent it is required that the claim language to be

precise and unambiguous. For purposes of compact prosecution, Examiner will interpret claim 1 as:

1. A smart shopping cart system, comprising:

   <u>a smart shopping cart comprising a shopping cart body, a server and a display screen, wherein:</u>

   ~~a smart shopping cart comprising a shopping cart body,~~ the smart shopping cart being

configured to collect user information and transmit the user information over a network to [[a]] <u>the</u>

server, and cause at least one user interface to be shown in [[a]] <u>the</u> display screen;

   the server being configured to... [[a]] <u>the</u> display screen;

   at least one of a camera...

   wherein the server....

   receive the image...

   query an edible collocation information database...

   cause the edible collocation information...

   the display screen...

### *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 1-3, 6-8 and 11, 15-18 and 22-24- are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In particular, claims are directed to a judicial exception (abstract idea) without significantly more.**

In the instant case, claims 1-3, 6-8 and 12-15 are directed to a system, claims 11 and 16-24 are directed to a process (see MPEP 2106.03). Claims 1, 6, 11 and 16 are parallel in nature, therefore, the analysis will use claim 1 as a representative claim.

While the claims fall within statutory categories, under revised step 2A, Prong 1 of the 2019 Revised Patent Subject Matter Eligibility Guidance, hereinafter referred to as the "2019 PEG", the claimed invention of claim 1 (representative) recites the abstract idea of "obtaining, identifying user information and generating product push information based on user consumption interest data".

Specifically, claim 1 (representative) recites the steps of collecting and transmitting user information, receiving user information, identifying user identity information from the user information, querying a user consumption history based on the user identity information to obtain user consumption history data, generating user consumption interest data according to the user consumption history data, generating and displaying product push information according to the user consumption interest data, and sending the product push information to the user, capturing and transmitting an image of a product/scanning a barcode of the product and obtaining food information of the product, obtaining edible collection information, identifying a food that is more nutritious than the product by comparing nutritional characteristics of the food to that of the product, or identifying a pair of food items that should not be eaten together based on the product, causing the edible collocation information to be presented to the user, the edible collocation information comprising the food that is more nutritious than the product, or the food that should not be eaten together with the product, and displaying the product push information and the edible collocation information.

Under revised Step 2A, Prong 1 of the 2019 PEG, it is necessary to evaluate whether the claim recites a judicial exception by referring to subject matter groupings articulated in the guidance. When considering the 2019 PEG, the claims recite an abstract idea. For example, representative claim 1 recites the abstract idea of "obtaining, identifying user information and generating product push information based on user consumption interest data", as noted above. These concepts are considered to be certain methods of organizing human activity. Certain methods of organizing human activity are defined by the 2019 PEG as including "fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions)". In this case, the abstract idea recited in representative claim 1 is certain methods of organizing human activity because the system collects user information and providers the user of product recommendations based on user consumption data. Providing product suggestions and recommendations to a user while shopping are commercial or legal interaction because it is an advertising, marketing or sales activities or behaviors. Thus, claims 1, 6, 11 and 16 recite an abstract idea.

Under revised Step 2A, Prong 2 of the 2019 PEG, if it is determined that the claims recite a judicial exception, it is then necessary to evaluate whether the claims recite additional elements that integrate the judicial exception into a practical application of that exception. In this case, claims 1 (representative), 6, 11 and 16 include additional elements such as *a smart shopping cart, a shopping cart body, a network, a server, at least one user interface shown in a display screen, one or more databases, and a camera/barcode scanner.* Although the claims recite these additional elements, the additional elements merely amount to no more than an instruction to apply the abstract idea on a computer, or merely uses the computer as a tool to perform the abstract idea. These additional elements are described at a high level of generality in applicant's specification and merely describes the individual elements in generic

terms. For example, the specification describes "…These functional entities may be implemented in software, or implemented in one or more hardware modules or integrated circuits, or implemented in different networks and/or processor devices and/or microcontroller devices." (See ¶0039), "…a smart shopping system including a plurality of smart shopping carts and a computing device, such as a server. The smart shopping cart includes a shopping cart body and an interaction system, and the interaction system includes an image capturing unit and a display unit." (See Fig. 1; ¶0040), "…the server is configured to receive the product image, identify the product image to obtain food information of food in the product, and query edible collocation information database according to the food information to obtain edible collocation information, wherein the edible collocation information database can be provided in the server." (See ¶0054), "…the user can scan the product with the scan code unit by himself, such that the display unit displays the edible matching information for the food in the product. (See ¶0060), "In order to enable the image capturing unit can capture both of the image of the user face and the image of the product placed by the user into the shopping cart body, the image capturing unit can be a 3600 camera…" (See ¶0061).

These descriptions of *a smart shopping cart, a shopping cart body, a network, a server, at least one user interface shown in a display screen, one or more databases, and a camera/barcode scanner* demonstrate that the claimed additional elements are described at a high level of generality in applicant's specification, merely described in generic terms, and amount to no more than an instruction to apply the abstract idea using a generic computer or merely using a computer as a tool to perform the abstract idea. Accordingly, these additional elements do not integrate the abstract idea into a practical application because they do not impose any meaningful limits on practicing the abstract idea. Therefore, claims 1, 6, 11 and 16 do not recite additional elements that integrate the judicial exception into a practical application of that exception.

Under Step 2B of the 2019 PEG, if it is determined that the claims recite a judicial exception that

is not integrated into a practical application of that exception, it is then necessary to evaluate the

additional elements individually and in combination to determine whether they provide an inventive

concept (i.e., whether the additional elements amount to significantly more than the exception itself). As

discussed above with respect to integration of the abstract idea into a practical application, the additional

element(s) individually and in combination are merely being used to apply the abstract idea to a

technological environment. The invention as claimed merely automates (See ¶0081) "obtaining,

identifying user information and generating product push information based on user consumption

interest data" (claims 1, 6, 11 and 16) (i.e., the abstract idea) and does not add meaningful limitations to

the abstract ideas beyond generally linking the process to a particular technological environment, that is,

implementation via computers/software (see MPEP 2106.05 (I)(A) and 2106.05(f)). Therefore, the

additional elements alone or in ordered combination do not render the claim as being significantly more

than the underlying abstract idea. Accordingly claims 1, 6, 11 and 16 are ineligible.

Dependent claim(s) 2, 3, 7, 8, 15, 17, 18 and 22-24 do not aid in the eligibility of independent

claims 1, 6, 11 and 16 as they merely act to provide further embellishments of the abstract idea recited in

claims 1, 6, 11 and 16. Accordingly, claim(s) 2, 3, 7, 8, 15, 17, 18 and 22-24 are ineligible.

Dependent claim(s) 12-14 and 19-21 do aid in the eligibility of independent claims 1, 6, 11 and 16

as they provide further embellishments of the abstract idea recited in claims 1, 6, 11 and 16. Such as the

use of the motion identification and detection features, "...wherein the motion identification and

detection comprises determining that a proportion of pixels have changes in gray values between adjacent

frame images that exceed a threshold size... and ...comparing, by the server, adjacent frame images

captured by and received from the camera; determining, by the server, a changed region in the image

based on depth information; extracting, by the server, the changed region as a candidate product region;

executing, by the server, a product identification model on the candidate product region as extracted to

identify a type of the product placed into the shopping cart body. The claims as a whole amount to

significantly more than the abstract idea itself. This is because the claim as a whole effect an improvement

to another technology or technical field. These limitations in combination provide meaningful limitations

beyond generally linking the use of the abstract idea to a particular technological environment. These

limitations, when taken as an ordered combination, provide unconventional steps that confine the

abstract idea to a particular application. Therefore, the claim recites patent eligible subject matter.

Accordingly, claim(s) 12-14 and 19-21 are eligible.

## *Claim Rejections - 35 USC § 103*

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or

as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the

rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale

supporting the rejection, would be the same under either status.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth

in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is
> not identically disclosed as set forth in section 102, if the differences between the claimed invention
> and the prior art are such that the claimed invention as a whole would have been obvious before the
> effective filing date of the claimed invention to a person having ordinary skill in the art to which the
> claimed invention 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 35 U.S.C. 103 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.

This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

**Claims 1, 3, 6, 8, 16 and 18 are rejected under 35 U.S.C. 103 as being unpatentable over *Cheng* (US 2019/0279185 A1 [previously recited]) in view of *Babu et al.* (US 2016/0140644 A1).**

**As per claim 1**, *Cheng* teaches a smart shopping cart system **(Fig. 1)**, comprising:

a smart shopping cart comprising a shopping cart body, a server and a display screen, wherein **(Abstract and ¶0080)**:

a smart shopping cart **(Fig. 1 and Abstract)** being configured to collect user information, transmit the user information over a network to the server **(¶0028 [...then realizing user login by inputting the mobile phone number, scanning the personal QR code, or scanning the scan code of WeChat through the touchscreen computer on the intelligent shopping cart...and sending the number information, the login information and the total weight m.sub.1 to the server...] and ¶0080 [...network...])**, and cause at least one user interface to be shown in the display screen **(¶0080 [...Finally, the intelligent shopping cart**

is connected to the server of the supermarket through the network to obtain the commodity

information and display it on the screen of the touchscreen computer 13. After the commodity

information is read, the commodity can be placed in the shopping device...]);

the server being configured to receive the user information (¶0028 [...and sending the number

information, the login information and the total weight m.sub.1 to the server...] in view of ¶0014

[...receive the on-site information sent by the intelligent shopping cart...]), identify user identity

information from the user information (¶0028 [...then realizing user login by inputting the mobile phone

number, scanning the personal QR code, or scanning the scan code of WeChat through the touchscreen

computer on the intelligent shopping cart...) generate product push information (¶0033 [...the

commodity advertisements in the area can be accurately displayed to the user] and ¶0085 [...the

touchscreen computer 13 can load the map to formulate a route for the user, and can also implement

the push of promotional advertisements in the positioning region]) and send the product push

information to the display screen (¶0033 [...the commodity advertisements in the area can be accurately

displayed to the user...] and ¶0085 [...can also implement the push of promotional advertisements in

the positioning region] in view of ¶0042 [...The touchscreen computer 13 has a display function and/or

an operation function, and can display a shopping list, user information, commodity information,

payment information, etc...]);

at least one of a camera configured to capture an image of a product placed into the shopping

cart body and transmit the image of the product to the server (¶¶0006-0007 [monitoring device is

comparable to a camera] in view of ¶0030 [... The intelligent shopping cart ... can further read the

barcode information of the pre-purchased commodity through the camera...], ¶0068 [a picture of the

shopping device is captured at this moment by the monitoring device]), the smart shopping cart is

further configured to capturing an image with the camera]); and a barcode scanner configured to scan a

barcode of the product placed into the shopping cart body and transmit scanned barcode information to

the server (¶0074 in view of ¶0030 [... The intelligent shopping cart realizes one-to-one instant reading

of the commodity through the code-scanning device without changing the current shopping habits of

users, and can further read the barcode information of the pre-purchased commodity through the

camera...]) and;

wherein the server is further configured to (¶0018 [...server...]):

receive the image of the product or the scanned barcode information and obtain food information

of the product based on the image (¶0020 [...the on-site information includes...the commodity image

information collected and analyzed by the monitoring device...] and ¶0074 [..."In some embodiments,

after the user aims the barcode of the commodity at the code-scanning device on the intelligent

shopping cart for scanning, the monitoring device starts to collect image information, and sends all the

collected image information to the server...]) in view of ¶0014 [...receive the on-site information sent

by the intelligent shopping cart...] and ¶0019 [...simultaneously sending the commodity information to

the server wirelessly to retrieve the original information of the corresponding commodity...]); and

the display screen being configured to transition between the at least one user interface

comprising the product information (¶0042 [...The touchscreen computer 13 has a display function

and/or an operation function, and can display a shopping list, user information, commodity

information, payment information, etc...] in view of ¶0033 [...the commodity advertisements in the area

can be accurately displayed to the user, and a path navigation for finding the target commodity can be

provided for the user...] and ¶0085 [...can also implement the push of promotional advertisements in

the positioning region...]).

While *Cheng* teaches the smart shopping cart being configured to collect and transmit user

information (¶0028 and ¶0080), *Cheng* does not explicitly teach that the server is being configured to,

query a user consumption history database based on the user identity information to obtain user

consumption history data, generate user consumption interest data according to the user consumption

history data, and generate product push information according to the user consumption interest data;

wherein the server is further configured to: query an edible collocation information database

according to the food information to obtain edible collocation information by: querying the edible

collocation information database to identify a food that is more nutritious than the product placed into

the shopping cart body by comparing nutritional characteristics of the food to that of the product placed

in the shopping cart body; or querying the edible collocation information database to identify a pair of

food items that should not be eaten together based on the product placed in the shopping cart body; and

cause the edible collocation information to be presented in the at least one user interface shown

in the display screen, the edible collocation information comprising the food that is more nutritious than

the product, **or** the food that should not be eaten together with the product; and

the display screen being configured to transition between the at least one user interface

comprising the product push information and the at least one user interface comprising the edible

collocation information.

However, in the field of recommending food items based on personal information and nutritional

content, *Babu et al.*, (hereinafter, "*Babu*") teaches a system and method for recommending food items

based on personal information and nutritional content **(Abstract)**, including:

a server being configured to **(Fig. 1; ¶0026 [...Computing device 100 can function as a server...])**,

query a user consumption history database based on the user identity information to obtain user

consumption history data, generate user consumption interest data according to the user consumption

history data, and generate product push information according to the user consumption interest data

**(Abstract, ¶¶0038-0040 [...Customer 222 can register (e.g., using merchant module 226) for a nutritional**

**service offered by a merchant. When customer 222 registers, customer 222 can furnishes information**

**that allows the merchant to recommend food items to customer 222 based on provided profile**

information…After customer registration, merchant computer system 211 can begin to track a food

purchase history for customer 222. Alternately, merchant computer system 221 can access an existing

food purchase history. In one aspect, customer 222 may have previously registered for one or more

other merchant programs (e.g., a rewards program) that already track food purchase history. Merchant

computer system 211 can access the food purchase history. An access food purchase history can be used

to supplement customer profile 213. In general, food item recommendation module 216 can use

information contained in customer profile 213 to make food item recommendations for customer 222…]

and ¶0057 […Thus, aspects of the invention can include an intelligent food recommendation system

based on shopping cart contents as well as scientific nutritional data for an item, family demographics,

consumption pattern, medical history, and takes into account current item prices and discounts being

offered by a merchant (or manufacturer]…).

wherein the server **(Fig. 1; ¶0026 […Computing device 100 can function as a server…])** is further

configured to: query an edible collocation information database according to the food information to

obtain edible collocation information by: querying the edible collocation information database to identify

a food that is more nutritious than the product placed into the shopping cart body by comparing

nutritional characteristics of the food to that of the product placed in the shopping cart body; **or** querying

the edible collocation information database to identify a pair of food items that should not be eaten

together based on the product placed in the shopping cart body **(Abstract, ¶¶0038-0040 […Customer 222**

**can register (e.g., using merchant module 226) for a nutritional service offered by a merchant. When**

**customer 222 registers, customer 222 can furnishes information that allows the merchant to**

**recommend food items to customer 222 based on provided profile information…After customer**

**registration, merchant computer system 211 can begin to track a food purchase history for customer**

**222. Alternately, merchant computer system 221 can access an existing food purchase history. In one**

**aspect, customer 222 may have previously registered for one or more other merchant programs (e.g.,**

**a rewards program) that already track food purchase history. Merchant computer system 211 can**

**access the food purchase history. An access food purchase history can be used to supplement customer**

**profile 213. In general, food item recommendation module 216 can use information contained in**

**customer profile 213 to make food item recommendations for customer 222...] and ¶¶0054-0057 and**

**[Method 400 includes forwarding the selection of the one or more food items to a server of the**

**merchant...Thus, aspects of the invention can include an intelligent food recommendation system based**

**on shopping cart contents as well as scientific nutritional data for an item, family demographics,**

**consumption pattern, medical history, and takes into account current item prices and discounts being**

**offered by a merchant (or manufacturer]...)**; and

cause the edible collocation information to be presented in the at least one user interface shown

in the display screen, the edible collocation information comprising the food that is more nutritious than

the product, **or** the food that should not be eaten together with the product **(Fig. 1, element 106 and 130;**

**Fig. 2, element 201 and  ¶0055 [...Method 400 includes receiving a recommendation for an additional**

**food item from the server, the recommended additional food item having been determined to satisfy a**

**nutritional requirement not satisfied by the selected one or more food items...]**; and

the display screen being configured to display the at least one user interface comprising the

product push information and the at least one user interface comprising the edible collocation

information **(Abstract, Fig. 1, element 106 and 130; Fig. 2, element 201 and ¶0055 [...Method 400**

**includes receiving a recommendation for an additional food item from the server, the recommended**

**additional food item having been determined to satisfy a nutritional requirement not satisfied by the**

**selected one or more food items...]**.

The system of *Babu* is applicable to the system of Cheng as they share characteristics and

capabilities, namely, they are directed to smart shopping cart recommendations. It would have been

obvious to one of ordinary skill in the art at the time of filing to modify the intelligent shopping cart, as

taught by *Cheng* with the server is being configured to, query a user consumption history database based on the user identity information to obtain user consumption history data, generate user consumption interest data according to the user consumption history data, and generate product push information according to the user consumption interest data..., as taught by *Babu*. One of ordinary skill in the art at the time of filing would have been motivated to expand the system of *Cheng* in order to provide more efficiency to the consumer by saving time and effort to aggregate nutritional information for multiple food item (*Babu*: ¶0006) and help extend benefits to others including product sellers who typically loose both time and money when a consumer purchases a product based on current recommender systems, is dissatisfied with the product, and then returns the product for a refund.

As per claim 3, *Cheng* in view of *Babu*, as shown above, teach the smart shopping cart system according claim 1. *Cheng* further teaches wherein the display screen is a touch screen, and the smart shopping cart is configured to collect the user information by obtaining user information input through the touch screen (¶0028 [...**then realizing user login by inputting the mobile phone number, scanning the personal QR code, or scanning the scan code of WeChat through the touchscreen computer on the intelligent shopping cart...**]).

As per claim 6, *Cheng* teaches a system (**Abstract**), comprising:

at least one computing device having at least one hardware processor (¶0088 [...**microprocessor or other computing device...**]), an input/output (I/O) interface (**Fig. 3; touchscreen computer 13; ¶0042 [...The touchscreen computer 13 has a display function and/or an operation function, and can display a shopping list, user information, commodity information, payment information, etc...] in view of ¶0028**), and a memory (¶0086 [...**stored in a memory...**]);

program instructions stored in the memory that, when executed by the at least one hardware

processor, direct the at least one computing device (¶0088 [... **In general, the various embodiments of**

**the present disclosure can be implemented by hardware or special purpose circuits, software, logic, or**

**any combination thereof. Some aspects can be implemented by hardware, while others can be**

**implemented by firmware or software. The firmware or software can be executed by a controller,**

**microprocessor or other computing device...]**) to:

receive, by the I/O interface **(Fig. 3; touchscreen computer 13)**, user information associated with

a user of a smart shopping cart **(¶0028 [...then realizing user login by inputting the mobile phone**

**number, scanning the personal QR code, or scanning the scan code of WeChat through the touchscreen**

**computer on the intelligent shopping cart...]** in view of ¶0042 [...**The touchscreen computer 13 has a**

**display function and/or an operation function, and can display a shopping list, user information,**

**commodity information, payment information, etc...])**;

identify, by the at least one hardware processor, user identity information from the user

information **(¶0078 [...the user login is performed by inputting the mobile phone number, scanning the**

**personal QR code, or scanning the scan code by WeChat through the touchscreen computer 13 on the**

**intelligent shopping cart; and the touchscreen computer 13 is in a communication connection to the**

**server to obtain the basic information of the user...])**;

generate, by the at least one hardware processor, a first user interface for display of product push

information **(¶0042 [...The touchscreen computer 13 has a display function and/or an operation**

**function, and can display a shopping list, user information, commodity information, payment**

**information, etc...]** in view of ¶0033 [...**the commodity advertisements in the area can be accurately**

**displayed to the user, and a path navigation for finding the target commodity can be provided for the**

**user]** and ¶0085 [...**then the touchscreen computer 13 can load the map to formulate a route for the**

**user, and can also implement the push of promotional advertisements in the positioning region...])**;

send, by the I/O interface **(Fig. 3; touchscreen computer 13)**, the user interface comprising the

product push information to the smart shopping cart for display on a display screen **(¶0042 [...The**

**touchscreen computer 13 has a display function and/or an operation function, and can display a**

**shopping list, user information, commodity information, payment information, etc...] in view of ¶0033**

**[...the commodity advertisements in the area can be accurately displayed to the user, and a path**

**navigation for finding the target commodity can be provided for the user] and ¶0085 [...then the**

**touchscreen computer 13 can load the map to formulate a route for the user, and can also implement**

**the push of promotional advertisements in the positioning region...](Examiner's Note: The claimed**

**limitation "display on a display screen" is considered intended use))**;

receive, by the I/O interface **(Fig. 3; touchscreen computer 13)**, an image of a product or scanned

barcode information **(¶0042 [...The touchscreen computer 13 has a display function and/or an operation**

**function, and can display a shopping list, user information, commodity information, payment**

**information, etc., which is configured to comprehensively process information using the algorithm in a**

**shopping cart system after receiving one or more information such as the weight information of the**

**commodity sent by the weight sensor 5, barcode information of the commodity sent by the code-**

**scanning device 9, and image information of the commodity collected by the monitoring device 8...])**;

identify, by the I/O interface **(Fig. 3; touchscreen computer 13)**, the image to obtain food

information in the product **(¶0042 [...Alternatively, the touchscreen computer 13 is configured to**

**compare the weight information of the commodity sent by the weight sensor 5, the barcode**

**information of the commodity sent by the code-scanning device 9, and/or the image information of the**

**commodity collected by the monitoring device 8 with the original information of the commodity stored**

**in the touchscreen computer 13 after receiving them. After the comparative result of the received**

**information with the original information is consistent, the corresponding commodity information is**

**displayed by the touchscreen computer 13 and broadcasted by the voice broadcasting device 11...The**

monitoring devices 8 are used in combination for recording the appearance characteristics of the

commodities placed in the shopping device 6 from multiple angles, and sending the image information

of the appearance characteristics to the intelligent terminal device 3...]).

While *Cheng* teaches a system comprising at least one computing device having at least one

hardware processor (¶0088), an input/output (I/O) interface (Fig. 3; touchscreen computer 13; ¶0042 in

view of ¶0028), and a memory (¶0086), *Cheng* does not explicitly teach storing a user consumption history

database and an edible collocation information database thereon;

access, the user consumption history database to query the user consumption history database

based on the user identity information to obtain user consumption history data;

generate, user consumption interest data according to user consumption history data;

generate, a user interface for display of product push information according to the user

consumption interest data;

accessing, the edible collocation information database to query the edible collocation information

database according to the food information to obtain edible collocation information by: querying the

edible collocation information database to identify a food that is more nutritious than the product placed

into the smart shopping cart by comparing nutritional characteristics of the food to that of the product

placed in the smart shopping cart; or querying the edible collocation information database to identify a

pair of food items that should not be eaten together based on the product placed in the smart shopping

cart;

generate, the user interface comprising the edible collocation information, the edible collocation

information comprising the food that is more nutritious than the product, or the food that should not be

eaten together with the product; and

send, the user interface comprising the edible collocation information to the user smart shopping

cart for display in the display screen.

However, in the field of recommending food items based on personal information and nutritional content, *Babu* teaches a system and method for recommending food items based on personal information and nutritional content **(Abstract)**, including:

at least one computing device having at least one hardware processor **(Fig. 1, Processor 102)**, an input/output (I/O) interface, and a memory storing a user consumption history database and an edible collocation information database thereon **(Abstract, ¶0027[...one or more interface(s)...], ¶¶0038-0040 [...Customer 222 can register (e.g., using merchant module 226) for a nutritional service offered by a merchant. When customer 222 registers, customer 222 can furnishes information that allows the merchant to recommend food items to customer 222 based on provided profile information...After customer registration, merchant computer system 211 can begin to track a food purchase history for customer 222. Alternately, merchant computer system 221 can access an existing food purchase history. In one aspect, customer 222 may have previously registered for one or more other merchant programs (e.g., a rewards program) that already track food purchase history. Merchant computer system 211 can access the food purchase history. An access food purchase history can be used to supplement customer profile 213. In general, food item recommendation module 216 can use information contained in customer profile 213 to make food item recommendations for customer 222...] and ¶¶0055-0057 [...Thus, aspects of the invention can include an intelligent food recommendation system based on shopping cart contents as well as scientific nutritional data for an item, family demographics, consumption pattern, medical history, and takes into account current item prices and discounts being offered by a merchant (or manufacturer)...])**;

access, by the at least one hardware processor **(Fig. 1, Processor 102)** via that I/O interface, the user consumption history database to query the user consumption history database based on the user identity information to obtain user consumption history data **(Abstract, ¶0027 [...one or more interface(s)...], ¶¶0038-0040 [...After customer registration, merchant computer system 211 can begin**

to track a food purchase history for customer 222. Alternately, merchant computer system 221 can

access an existing food purchase history. In one aspect, customer 222 may have previously registered

for one or more other merchant programs (e.g., a rewards program) that already track food purchase

history. Merchant computer system 211 can access the food purchase history. An access food purchase

history can be used to supplement customer profile 213...] and ¶¶0055-0057 [...consumption

pattern...]);

generate, by the at least one hardware processor **(Fig. 1, Processor 102)**, user consumption

interest data according to user consumption history data **(Abstract, ¶¶0038-0040 [...In general, food item**

**recommendation module 216 can use information contained in customer profile 213 to make food item**

**recommendations (i.e. user consumption interest data) for customer 222...] and ¶¶0055-0057 [...Thus,**

**aspects of the invention can include an intelligent food recommendation system based on shopping**

**cart contents as well as scientific nutritional data for an item, family demographics, consumption**

**pattern, medical history, and takes into account current item prices and discounts being offered by a**

**merchant (or manufacturer)...]);**

generate, by the at least one hardware processor **(Fig. 1, Processor 102)**, a user interface for

display of product push information according to the user consumption interest data **(Abstract, ¶0027**

**[...one or more interface(s)...], ¶0033 [...Other interfaces include user interface 118...], ¶¶0038-0040**

**[...In general, food item recommendation module 216 can use information contained in customer**

**profile 213 to make food item recommendations for customer 222...] and Fig. 2, Portable Electronic**

**Device 201 and Display Unit 204; ¶¶0055-0057 [Food item recommendation module 216 can send**

**another recommendation to portable electronic device 201 based on the updated comparison...Thus,**

**aspects of the invention can include an intelligent food recommendation system based on shopping**

**cart contents as well as scientific nutritional data for an item, family demographics, consumption**

pattern, medical history, and takes into account current item prices and discounts being offered by a

merchant (or manufacturer)...]);

accessing, by the at least one hardware processor **(Fig. 1, Processor 102)** via the I/O interface, the

edible collocation information database to query the edible collocation information database according

to the food information to obtain edible collocation information by: querying the edible collocation

information database to identify a food that is more nutritious than the product placed into the smart

shopping cart by comparing nutritional characteristics of the food to that of the product placed in the

smart shopping cart **(Abstract [...As a customer shops, the merchant computer system compares the**

**nutritional content of the shopping cart items with nutritional needs of the customer.**

**Recommendations are furnished to the customer based on the shopping cart content and the**

**nutritional needs of the customer], ¶0027 [...one or more interface(s)...], ¶¶0038-0040 [...Customer 222**

**can register (e.g., using merchant module 226) for a nutritional service offered by a merchant. When**

**customer 222 registers, customer 222 can furnishes information that allows the merchant to**

**recommend food items to customer 222 based on provided profile information...After customer**

**registration, merchant computer system 211 can begin to track a food purchase history for customer**

**222. Alternately, merchant computer system 221 can access an existing food purchase history. In one**

**aspect, customer 222 may have previously registered for one or more other merchant programs (e.g.,**

**a rewards program) that already track food purchase history. Merchant computer system 211 can**

**access the food purchase history. An access food purchase history can be used to supplement customer**

**profile 213. In general, food item recommendation module 216 can use information contained in**

**customer profile 213 to make food item recommendations for customer 222...] and ¶¶0055-0057**

**[...Thus, aspects of the invention can include an intelligent food recommendation system based on**

**shopping cart contents as well as scientific nutritional data for an item, family demographics,**

**consumption pattern, medical history, and takes into account current item prices and discounts being**

**offered by a merchant (or manufacturer)...])**; **or** querying the edible collocation information database to

identify a pair of food items that should not be eaten together based on the product placed in the smart

shopping cart ;

generate, by the at least one hardware processor **(Fig. 1, Processor 102)**, the user interface

comprising the edible collocation information, the edible collocation information comprising the food that

is more nutritious than the product, **or** the food that should not be eaten together with the product

**(Abstract, Fig. 1, element 106 and 130; ¶0027 [...one or more interface(s)...] and Fig. 2, Portable**

**Electronic Device 201 and Display Unit 204; ¶¶0055-0057 [Method 400 includes receiving a**

**recommendation for an additional food item from the server, the recommended additional food item**

**having been determined to satisfy a nutritional requirement not satisfied by the selected one or more**

**food items...Food item recommendation module 216 can send another recommendation to portable**

**electronic device 201 based on the updated comparison...Thus, aspects of the invention can include an**

**intelligent food recommendation system based on shopping cart contents as well as scientific**

**nutritional data for an item, family demographics, consumption pattern, medical history, and takes into**

**account current item prices and discounts being offered by a merchant (or manufacturer)...])**; and

send, by the I/O interface, the user interface comprising the edible collocation information to the

user smart shopping cart for display in the display screen **(Abstract, Fig. 1, element 106 and 130; ¶0027**

**[...one or more interface(s)...] and Fig. 2, Portable Electronic Device 201 and Display Unit 204; ¶0051**

**[...For example, food item recommendation module 216 can send food item recommendation 232 to**

**portable electronic device 201...] and ¶0056 [...Food item recommendation module 216 can send**

**another recommendation to portable electronic device 201 based on the updated comparison...])**.

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* is the same

as that set forth above, in the rejection of claim 1.

**As per claim 8,** *Cheng* in view of *Babu*, as shown above, teach the system according to claim 6. *Cheng* further teaches wherein the at least one computing device is further configured to receive login information input on the smart shopping cart, and obtain the user identity information according to the login information.. (¶0028 [...then realizing user login by inputting the mobile phone number, scanning the personal QR code, or scanning the scan code of WeChat through the touchscreen computer on the intelligent shopping cart; subsequently, reading the total weight information m.sub.1 of the user and the intelligent shopping cart by the weight sensor of the intelligent shopping cart; and sending the number information, the login information and the total weight m.sub.1 to the server through the touchscreen computer...] and ¶0078).

**As per claim 16**, the claim discloses substantially the same limitations as claim 1, except claim 1 is directed to a system while claim 16 is directed to a process. All limitations as recited have been analyzed and rejected with respect to claim 1, and do not introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 16 is rejected for the same rational over the prior art cited in claim 1.

**As per claim 18**, the claim discloses substantially the same limitations as claim 3, except claim 3 is directed to a system depending from claim 1 while claim 18 is directed to process depending from claim 16. All limitations as recited have been analyzed and rejected with respect to claim 3, and do not introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 18 is rejected for the same rational over the prior art cited in claim 3.

**Claims 2, 7, 11 and 17 are rejected under 35 U.S.C. 103 as being unpatentable over** *Cheng* **in view of** *Babu* **and** *Lobo et al.* **(US 2019/0337549 A1 [previously recited]).**

**As per claim 2,** *Cheng* in view of *Babu*, as shown above, teach all the smart shopping cart system according claim 1. While *Cheng* further teaches wherein the smart shopping cart comprises the camera (¶¶0006-0007 **[monitoring device is comparable to a camera] in view of ¶0030 [... The intelligent shopping cart ... can further read the barcode information of the pre-purchased commodity through the camera...], ¶0068 [a picture of the shopping device is captured at this moment by the monitoring device]), the smart shopping cart is further configured to capturing an image with the camera]),** *Cheng* in view of *Babu* do not explicitly teach the smart shopping cart is further configured to <u>collect the user information</u> by capturing an image <u>of a user face</u> with the camera.

However, in the field of purchase transactions while shopping in a store, *Lobo et al.* (hereinafter, "*Lobo*") teaches a system and method for transactions at a shopping cart **(Title)**, where the shopping cart collects user information by capturing an image of a user face with the camera **(Abstract, ¶0028 [...captures a first image of a face of a user using a first camera coupled to the cart when the processing device coupled to the cart receives an input from the user...])**.

The system of *Lobo* is applicable to the system of *Cheng* in view *Babu* as they share characteristics and capabilities, namely, they are directed to smart shopping cart recommendations. It would have been obvious to one of ordinary skill in the art at the time of filing to modify the user information collected by the intelligent shopping cart, as taught by *Cheng* in view of *Babu* with the smart shopping cart is further configured to collect the user information by capturing an image of a user face with the camera, as taught by *Lobo*. One of ordinary skill in the art at the time of filing would have been motivated to expand the system of *Cheng* in view *Babu* in order to enhance the efficiency/accuracy and security of the system by making the identification of the consumer automated and reducing human interaction.

**As per claim 7,** *Cheng* in view of *Babu*, as shown above, teach the system according to claim 6. While *Cheng* teaches wherein the smart shopping cart comprises the camera (**¶0030 ["... The intelligent**

**shopping cart ... can further read the barcode information of the pre-purchased commodity through the camera"])** and obtain the user identity information **(¶0028 [...then realizing user login by inputting the mobile phone number, scanning the personal QR code, or scanning the scan code of WeChat through the touchscreen computer on the intelligent shopping cart...]),** *Cheng* in view of *Babu* do not explicitly teach <u>wherein the at least one computing device is further configured to receive an image of a user face, and identify the image of the user face </u>to obtain the user identity information.

However, in the field of purchase transactions while shopping in a store, *Lobo* teaches a system and method for transactions at a shopping cart **(Title)**, further wherein the at least one computing device **(¶0062 [...computing device 600...])** is further configured to receive an image of a user face, and identify the image of the user face to obtain the user identity information **(Abstract [...A first image of a user's face is captured by a first camera at a device coupled to the shopping cart, and the first image is stored in a database. A second image of the user's face is captured by a second camera when one or more sensors at a fixture detect an item is being removed from the fixture. The second image is analyzed and it is determined that the face in the second image corresponds to the face in the first image...] and ¶0039 [...The cameras on the smart cart may be oriented towards an inner part of the cart and towards the customer's face. At block 304, the customer scans a unique cart identifier (e.g., barcode, QR code, alphanumerical text, etc.) with his mobile device to pair the smart cart with the mobile device. At block 306, the camera on the smart cart scans the customer's face. Steps 302, 304 and 306 are performed prior to placing items in the cart to establish a smart cart session and to associate a specific smart cart with a customer and his mobile device ...]).**

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* and *Lobo* is the same as that set forth above, in the rejection of claim 2.


**As per claim 11,** *Cheng* teaches providing a shopping cart method, comprising: **(Abstract)**;

capturing, by a shopping cart, an image **(¶0044 [...The on-site information of the commodity to be purchased, that is, the weight of the commodity, the commodity information and the image information in the shopping device 6, is respectively acquired by the weight sensor 5, the code-scanning device 9 and the monitoring device 8 provided on the intelligent shopping cart...])**;

performing, in a server **(¶0080)**:

generating product push information **(¶0033 and ¶0085); and**

displaying, by the smart shopping cart, the product push information in the at least one user interface **(¶0033 and ¶0085 in view of ¶0042).**

While *Cheng* teaches a smart shopping cart comprising a camera (¶¶0006-0007 in view of ¶0030, ¶0068) and generating product push information (¶0033 and ¶0085), *Cheng* does not explicitly teach performing, in the server: identifying the image of the user face to obtain the user identity information; querying the user consumption history database based on the user identity information to obtain the user consumption history data; generating the user consumption interest data according to the user consumption history data; and generating the product push information according to the user consumption interest data.

However, in the field of recommending food items based on personal information and nutritional content, *Babu* teaches a system and method for recommending food items based on personal information and nutritional content **(Abstract)**, including:

querying the user consumption history database based on the user identity information to obtain the user consumption history data **(Abstract, ¶0027 [...one or more interface(s)...], ¶¶0038-0040 [...After customer registration, merchant computer system 211 can begin to track a food purchase history for customer 222. Alternately, merchant computer system 221 can access an existing food purchase history. In one aspect, customer 222 may have previously registered for one or more other merchant programs (e.g., a rewards program) that already track food purchase history. Merchant computer system 211 can**

**access the food purchase history. An access food purchase history can be used to supplement customer profile 213...] and ¶¶0055-0057 [...consumption pattern...]);**

generating the user consumption interest data according to the user consumption history data **(Abstract, ¶¶0038-0040 [...In general, food item recommendation module 216 can use information contained in customer profile 213 to make food item recommendations (i.e. user consumption interest data) for customer 222...] and ¶¶0055-0057 [...Thus, aspects of the invention can include an intelligent food recommendation system based on shopping cart contents as well as scientific nutritional data for an item, family demographics, consumption pattern, medical history, and takes into account current item prices and discounts being offered by a merchant (or manufacturer)...]);** and

generating the product push information according to the user consumption interest data **(Abstract, ¶0027 [...one or more interface(s)...], ¶0033 [...Other interfaces include user interface 118...], ¶¶0038-0040 [...In general, food item recommendation module 216 can use information contained in customer profile 213 to make food item recommendations for customer 222...] and Fig. 2, Portable Electronic Device 201 and Display Unit 204; ¶¶0055-0057 [Food item recommendation module 216 can send another recommendation to portable electronic device 201 based on the updated comparison...Thus, aspects of the invention can include an intelligent food recommendation system based on shopping cart contents as well as scientific nutritional data for an item, family demographics, consumption pattern, medical history, and takes into account current item prices and discounts being offered by a merchant (or manufacturer)...]);** and

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* is the same as that set forth above, in the rejection of claim 1.

While *Cheng* teaches providing a smart shopping cart system (abstract), *Cheng* does not explicitly teach providing the smart shopping cart system according to claim 1. However, for the reasons cited in claim 1, *Cheng* in view of *Babu* teaches providing the shopping cart system according to claim 1.

While *Cheng* teaches capturing, by the smart shopping cart, an image (¶0044) and obtain user

identity information (¶0028), *Cheng* in view of *Babu* do not explicitly teach capturing, by the smart

shopping cart, <u>an image of a user face</u>; performing, in the server: <u>identifying the image of the user face</u> to

obtain the user identity information.

However, in the field of purchase transactions while shopping in a store, *Lobo* teaches capturing,

by the smart shopping cart, an image of a user face; performing, in the server: identifying the image of

the user face to obtain the user identity information **(Abstract [...A first image of a user's face is captured**

**by a first camera at a device coupled to the shopping cart, and the first image is stored in a database. A**

**second image of the user's face is captured by a second camera when one or more sensors at a fixture**

**detect an item is being removed from the fixture. The second image is analyzed and it is determined**

**that the face in the second image corresponds to the face in the first image...], ¶0028 [...captures a first**

**image of a face of a user using a first camera coupled to the cart when the processing device coupled to**

**the cart receives an input from the user...] and ¶0039 [...The cameras on the smart cart may be oriented**

**towards an inner part of the cart and towards the customer's face. At block 304, the customer scans a**

**unique cart identifier (e.g., barcode, QR code, alphanumerical text, etc.) with his mobile device to pair**

**the smart cart with the mobile device. At block 306, the camera on the smart cart scans the customer's**

**face. Steps 302, 304 and 306 are performed prior to placing items in the cart to establish a smart cart**

**session and to associate a specific smart cart with a customer and his mobile device ...]).**

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* and *Lobo*

is the same as that set forth above, in the rejection of claim 2.


**As per claim 17**, the claim discloses substantially the same limitations as claim 2, except claim 2

is directed to a system depending from claim 1 while claim 17 is directed to a process depending from

claim 16. All limitations as recited have been analyzed and rejected with respect to claim 2, and do not

introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 17 is rejected

for the same rational over the prior art cited in claim 2.

**Claims 12, 13, 19 and 20 are rejected under 35 U.S.C. 103 as being unpatentable over _Cheng_ in view of**

**_Babu_ and Ren et al. (US 10,761,856 A1).**

         **As per claim 12,** _Cheng_ in view of _Babu_, as shown above, teaches the smart shopping cart

according to claim 1. _Cheng_ further teaches wherein: the smart shopping cart system comprises the

camera configured to capture the image of the product placed into the shopping cart body and transmit

the image of the product to the server **(¶0014 [...The server, interacting with the touchscreen computer,**

**is configured to store the original information of the commodities, receive the on-site information sent**

**by the intelligent shopping cart...])**; and wherein the server is further configured to, in response to receipt

of the image of the product and identify a placement of the product of the product in the shopping cart

body **(¶¶0006-0007 [monitoring device is comparable to a camera] in view of ¶0030 [... The intelligent**

**shopping cart ... can further read the barcode information of the pre-purchased commodity through the**

**camera...] and ¶0068 [a picture of the shopping device is captured at this moment by the monitoring**

**device])**, the smart shopping cart is further configured to capturing an image with the camera]).

         While _Cheng_ teaches a camera configured to capture an image of the product (¶¶0006-0007 in

view of ¶0030, ¶0068), _Cheng_ in view of _Babu_ do not explicitly teach identify a placement of the product

in the shopping cart body through motion identification and detection, wherein the motion identification

and detection comprises determining that a proportion of pixels have changes in gray values between

adjacent frame images that exceed a threshold size.

         However, in the field of item detection, _Ren et al._ (hereinafter _"Ren"_) teaches the use of motion

identification and detection, wherein the motion identification and detection comprises determining that

a proportion of pixels have changes in gray values between adjacent frame images that exceed a threshold

size **(Column 22, Lines 44-64 [...by comparing pixels of adjacent frames of video of the inventory location**

**to determine difference in the color values and/or depth information between adjacent frames exceeds**

**defined threshold. Alternatively, motion or pressure sensors (input component) may be monitored for**

**changes exceeding a defined threshold. When a change exceeding a threshold is detected by an input**

**component, a change notification may be generated indicating that an activity has occurred at the**

**inventory location...] in view of Column 17, Lines 44-50 [...In some implementations, the image may be**

**processed in grey-scale to identify features and/or may be processed using a HOG algorithm to**

**determine a distribution of image gradients or edge direction that are used to generate model feature**

**vectors...] and Column 23, Lines 5-10 [...For example, pixels of adjacent frames of video may be**

**compared to determine when the difference between the pixel colors and/or depth of the adjacent**

**frames falls below a threshold...]).**

The system of *Ren* is applicable to the system of *Cheng* in view *Babu* as they share characteristics

and capabilities, namely, they are directed to item detection using image analysis. It would have been

obvious to one of ordinary skill in the art at the time of filing to modify the camera of the smart shopping

cart, as taught by *Cheng* in view of *Babu* with the use of motion identification and detection, wherein the

motion identification and detection comprises determining that a proportion of pixels have changes in

gray values between adjacent frame images that exceed a threshold size, as taught by *Ren*. One of

ordinary skill in the art at the time of filing would have been motivated to expand the system of *Cheng* in

view *Babu* in order to eliminate a duplicate count of items (*Ren*: Column 3, Lines 49-53) and enhance the

efficiency/accuracy of the system by making the identification of the items automated.


**As per claim 13**, *Cheng* in view of *Babu* and *Ren*, as shown above, teach the smart shopping cart

system according to claim 12. *Cheng* further teaches wherein the server is configured to **(¶0014 [...The**

**server, interacting with the touchscreen computer, is configured to store the original information of the commodities, receive the on-site information sent by the intelligent shopping cart, compare the on-site information with the corresponding original information...] and ¶0080 [...Finally, the intelligent shopping cart is connected to the server of the supermarket through the network to obtain the commodity information...]),** in response to the placement of the product in the shopping cart body: identify a type of the product placed into the shopping cart body ; and obtain the food information of the product according to the product identification model, wherein the product identification model is pre-trained using samples of various types of products **(¶0069 [...the touchscreen computer 13 for scanning, and when the code-scanning device 9 scans the barcode or the two-dimensional code and identifies the information of the commodity...] in view of ¶0042 [...the touchscreen computer 13 is configured to compare the weight information of the commodity sent by the weight sensor 5, the barcode information of the commodity sent by the code-scanning device 9, and/or the image information of the commodity collected by the monitoring device 8 with the original information of the commodity stored in the touchscreen computer 13 after receiving them. After the comparative result of the received information with the original information is consistent, the corresponding commodity information is displayed by the touchscreen computer 13 and broadcasted by the voice broadcasting device 11...]).**

While *Cheng* teaches a server (¶0014 and ¶0080), a camera (¶0030) and identifying a product placed into the shopping cart (¶0069 in view of ¶0042), *Cheng* in view of *Babu* do not explicitly teach compare adjacent frame images captured by and received from the camera;

determine a changed region in the image based on depth information;

extract the changed region as a candidate product region;

execute a product identification model on the candidate product region as extracted to identify a type of the product.

However, in the field of item detection, *Ren* teaches compare adjacent frame images captured by and received from the camera; determine a changed region in the image based on depth information **(Column 22, Lines 44-64 [...by comparing pixels of adjacent frames of video of the inventory location to determine difference in the color values and/or depth information between adjacent frames exceeds defined threshold. Alternatively, motion or pressure sensors (input component) may be monitored for changes exceeding a defined threshold. When a change exceeding a threshold is detected by an input component, a change notification may be generated indicating that an activity has occurred at the inventory location...] in view of Column 17, Lines 44-50 [...In some implementations, the image may be processed in grey-scale to identify features and/or may be processed using a HOG algorithm to determine a distribution of image gradients or edge direction that are used to generate model feature vectors...] and Column 23, Lines 5-10 [...For example, pixels of adjacent frames of video may be compared to determine when the difference between the pixel colors and/or depth of the adjacent frames falls below a threshold...])**; extract the changed region as a candidate product region **(Column 23, Lines 29-37 [...a pixel comparison may be performed first and if it is determined that a difference between the pixel color values and/or depth information has changed beyond a threshold, item counts for both images may be determined to determine whether an action (e.g., item pick, item place) has occurred...])**; execute a product identification model on the candidate product region as extracted to identify a type of the product **(Column 17, Line 51 – Column 18, Line 2 [...Features of an item may be anything or a combination of things that are identifiable for that item. For example, a feature may be the shape of the item, a color of the item, the label or logo on the item, the wording on the item, a pattern on the item, a symbol on the item, a character on the item, a word on the item, a number on the item, a texture of the item, a gradient of the item, a reflectivity of the item, an edge of the item, and the like...])**.

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* and *Ren* is the same as that set forth above, in the rejection of claim 12.


**As per claim 14,** *Cheng* in view of *Babu* and *Ren***,** as shown above, teach the smart shopping cart system according to claim 13. *Cheng* further teaches wherein the server **(¶0014 [...The server, interacting with the touchscreen computer, is configured to store the original information of the commodities, receive the on-site information sent by the intelligent shopping cart...] and ¶0080 [Finally, the intelligent shopping cart is connected to the server of the supermarket through the network to obtain the commodity information and display it on the screen of the touchscreen computer 13...] in view of ¶0042)** is further configured to, in response to the type of the product being successfully identified **(¶0042 [...After the comparative result of the received information with the original information is consistent...])**, cause the at least one user interface shown in the display screen to display the product placed into the shopping cart body, the at least one user interface comprising product information associated with the product **(¶0042 [...The touchscreen computer 13 has a display function and/or an operation function, and can display a shopping list, user information, commodity information, payment information, etc...the corresponding commodity information is displayed by the touchscreen computer 13 and broadcasted by the voice broadcasting device 11.]).**


**As per claim 19,** the claim discloses substantially the same limitations as claim 12, except claim 12 is directed to a system depending from claim 1 while claim 19 is directed to a process depending from claim 16. All limitations as recited have been analyzed and rejected with respect to claim 12, and do not

introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 19 is rejected

for the same rational over the prior art cited in claim 12.


**As per claim 20**, the claim discloses substantially the same limitations as claim 13, except claim

13 is directed to a system depending from claim 12 while claim 20 is directed to a process depending from

claim 19. All limitations as recited have been analyzed and rejected with respect to claim 13, and do not

introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 20 is rejected

for the same rational over the prior art cited in claim 13.


**As per claim 21**, the claim discloses substantially the same limitations as claim 14, except claim

14 is directed to a system depending from claim 13 while claim 21 is directed to process depending from

claim 20. All limitations as recited have been analyzed and rejected with respect to claim 3, and do not

introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 21 is rejected

for the same rational over the prior art cited in claim 14.


**Claims 15 and 22 are rejected under 35 U.S.C. 103 as being unpatentable over *Cheng* in view of *Babu***

**and *Schaffernoth et al.* (US 2018/0285465 A1).**


**As per claim 15,** *Cheng* in view of *Babu*, as shown above, teach all the smart shopping cart system

according to claim 1. While *Cheng* teaches commodity identification (¶0066 and ¶0069), *Cheng* does not

explicitly teach wherein the edible collocation information database comprises a plurality of products and

a unique identifier associated with each of the plurality of products.

However, in the field of recommending food items based on personal information and nutritional

content, *Babu* teaches wherein the edible collocation information database comprises a plurality of

products and a unique identifier associated with each of the plurality of products **(Fig. 2, Product**

**Information 214; ¶0041 [Merchant computer system 211 also includes or has access to product**

**information 214. Product information 214 can include food item information, including nutritional**

**information and prices, for food items offer by a merchant...Although a produce item may not have a**

**bar code, a produce item can have an attached unique identifier. Nutritional information for a produce**

**item is available from various sources, such as the Department of Agriculture, The Food and Drug**

**Administration, consumer groups and other groups. As such, product information 214 can include a**

**unique identifier, nutritional information, and price for each food item offered by the merchant...]).**

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* is the same

as that set forth above, in the rejection of claim 1.



While *Cheng* teaches product recommendations (¶0085), *Cheng* in view *Babu* do not explicitly

teach <u>the edible collocation information database further comprising a plurality of combinations of the</u>

<u>products indicating whether or not a first subject of the products should be eaten with a second subset</u>

<u>of the products.</u>

However, in the field of recommending and presenting food items to a user device *Schaffernoth*

*et al.*, (hereinafter, "*Schaffernoth*") teaches a system and method for decision making

and recommendations **(Abstract)**, including: the edible collocation information database further

comprising a plurality of combinations of the products indicating whether **or not** a first subject of the

products should be eaten with a second subset of the products **(¶0046 [...Database 166 may also store**

**the user preferences for an account for the user. Database 166 may also store transaction**

**information...] in view of ¶¶0071-0074 [... In another embodiment, the system may provide suggestions**

**for pairings based on food selected or based on drink(s) selected, such as through an augmented reality**

**view from the mobile device 110. For example, the mobile app may show food matches for each wine**

**selected, along with why each food item may pair well with the selected wine. Alternatively, the mobile app may show wine recommendations based on the food item selected. The wine recommendation may include why the wine may pair well with the particular food item, along with other information such as how the wine is made and information that may be important to the user 105, based on the user 105's history and preferences...]).**

The system of *Schaffernoth* is applicable to the system of *Cheng* in view *Babu* as they share characteristics and capabilities, namely, they are directed to product identification and recommendation. It would have been obvious to one of ordinary skill in the art at the time of filing to modify the intelligent shopping cart, as taught by *Cheng* in view of *Babu* with the edible collocation information database further comprising a plurality of combinations of the products indicating whether or not a first subject of the products should be eaten with a second subset of the products, as taught by *Schaffernoth*. One of ordinary skill in the art at the time of filing would have been motivated to expand the system of *Cheng* in view *Babu* in order to enhance the efficiency of the system by making specific suggestions and providing the consumer with a system that is user friendly by pairing items together (*Schaffernoth:* ¶0071)

**As per claim 22**, the claim discloses substantially the same limitations as claim 15, except claim 15 is directed to a system depending from claim 1 while claim 22 is directed to a process depending from claim 16. All limitations as recited have been analyzed and rejected with respect to claim 15, and do not introduce any additional narrowing of the scopes of the claims as analyzed. Therefore, claim 22 is rejected for the same rational over the prior art cited in claim 15.

**Claims 23 is rejected under 35 U.S.C. 103 as being unpatentable over *Cheng* in view of *Babu*, *Lobo* and *Shang et al.* (US 10,147,129 B1).**

**As per claim 23**, *Cheng* in view of *Babu* and *Lobo*, as shown above, teach the method according to claim 17. Cheng further teaches generating, by the server the product push information such that the product push information comprises the recommended products to be presented in promotion information **(¶0033 [...the commodity advertisements in the area can be accurately displayed to the user] and ¶0085 [...the touchscreen computer 13 can load the map to formulate a route for the user, and can also implement the push of promotional advertisements in the positioning region]).**

While *Cheng* teaches wherein the smart shopping cart comprises the camera (¶0030), *Cheng* in view *Babu* do not explicitly teach identifying, by the server, a user of the smart shopping cart, through matching using the facial image.

However, in the field of purchase transactions while shopping in a store, *Lobo* teaches identifying, by the server, a user of the smart shopping cart, through matching using the facial image **(Abstract, ¶0028 [...captures a first image of a face of a user using a first camera coupled to the cart when the processing device coupled to the cart receives an input from the user...] and ¶0037 [...The server analyzes multiple images of the customer captured by cameras disposed within the store (including aisle cameras and cart cameras)...]).**

The motivation for making this modification to the teachings of *Cheng* in view of *Babu* and *Lobo* is the same as that set forth above, in the rejection of claim 2.


While *Cheng* teaches generating, by the server, the product push information such that the product push information comprises the recommended products and prices for the recommended products to be presented in promotion information (¶0033 and ¶0085 in view of ¶0008 [...transmission of the price information for display on the touchscreen computer...]), *Cheng* in view of *Babu* and *Lobo* do not explicitly teach sorting, by the server, products the user has purchased in an order from a high

purchase frequency to a low purchase frequency according to the user consumption history data; and

identifying, by the server, recommended products from the products with a purchase frequency higher

than other ones of the products;.

However, in the field of predictive item bundling, *Shang et al.* (hereinafter *"Shang"*) teaches

sorting, by the server, products users have purchased in an order from a high purchase frequency to a low

purchase frequency according to user consumption history data **(Column 3, Lines 38-58 [...multi-item**

**orders received in the past may be analyzed to identify items that are frequently ordered with other**

**items...] (Examiner's Note: The system of *Shang* analyzes (i.e. sorts) the items most frequently bought**

**together based on past orders from users (i.e. user consumption history data)));**

identifying, by the server, recommended products from the products with a purchase frequency

higher than other ones of the products **(Column 3, Lines 38-58 [...such an analysis may include**

**determining that consumers who order toothpaste also frequently order toothbrushes...] in view of**

**Column 17, Line 55 – Column 18, Line 13 [...to update or train a recommendation system that informs**

**users of combinations of items that the user may wish to purchase together, and/or that otherwise**

**determines items to suggest or present to a given user...] (Examiner's Note: The system of *Shang* then**

**identifies recommended products based on the frequency analysis (i.e. sorting) of the past orders from**

**users));**

The method of *Shang* is applicable to the method of *Cheng* in view of *Babu* and *Lobo* as they share

characteristics and capabilities, namely, they are consumer and product identification and analysis. It

would have been obvious to one of ordinary skill in the art at the time of filing to modify the intelligent

shopping cart, as taught by *Cheng* in view of *Lobo* with sorting, by the server, products the user has

purchased in an order from a high purchase frequency to a low purchase frequency according to the user

consumption history data; identifying, by the server, recommended products from the products with a

purchase frequency higher than other ones of the products; and generating, by the server, the product

push information such that the product push information comprises the recommended products and

prices for the recommended products to be presented in promotion information, as taught by *Shang*. One

of ordinary skill in the art at the time of filing would have been motivated to expand the method of *Cheng*

in view of *Babu* and *Lobo* in order to improve on conventional strategies of identifying or determining

collections or clusters of items (*Shang:* Column 3, Line 59-62).

**Claims 24 is rejected under 35 U.S.C. 103 as being unpatentable over *Cheng* in view of *Babu*, *Lobo*, *Shang***

**and *Noda et al.* (US 2001/0054014 A1).**

        **As per claim 24**, *Cheng* in view of *Babu*, *Lobo* and *Shang*, as shown above, teach the method

according to claim 23. While *Cheng* teaches the push of promotional advertisement to be presented in

promotion information (¶0085), *Cheng* in view *Babu* and *Lobo* do not explicitly teach the promotion

information comprises <u>a discount</u> for a respective one of the recommended products.

        However, in the field of identifying items that consumers are likely to purchase together, *Shang*

teaches teach the promotion information comprises a discount for a respective one of the recommended

products **(Column 17, Line 55 – Column 18, Line 13 [...such as by offering a discount on shipping or some**

**other incentive if the user purchases items associated with the same cluster...] in view of Column 3,**

**Lines 38-58)**.

        The motivation for making this modification to the teachings of *Cheng* in view of *Babu*, *Lobo* and

*Shang* is the same as that set forth above, in the rejection of claim 23.

        While *Cheng* teaches the push of promotional advertisement to be presented in promotion

information (¶0033 and ¶0085), *Cheng* in view of *Babu, Lobo* and *Shang* do not explicitly teach the

promotion information is generated such that <u>a higher the purchase frequency of the respective one of</u> <u>the recommended products, the higher the discount given to the user</u>.

However, in the field of client and merchandise information, *Noda et al.* (hereinafter *"Noda"*) teaches the promotion information is generated such that a higher the purchase frequency of the respective one of the recommended products, the higher the discount given to the user **(¶0144 [...client** **who frequently buys the merchandise of the company A, a discount rate higher than a normal discount** **rate is displayed...])**.

The method of *Noda* is applicable to the method of *Cheng* in view of *Babu, Lobo* and *Shang* as they share characteristics and capabilities, namely, they are consumer and product identification and analysis. It would have been obvious to one of ordinary skill in the art at the time of filing to modify the intelligent shopping cart, as taught by *Cheng* in view of *Shang* with the promotion information is generated such that a higher the purchase frequency of the respective one of the recommended products, the higher the discount given to the user, as taught by *Noda*. One of ordinary skill in the art at the time of filing would have been motivated to expand the method of *Cheng* in view of *Babu, Lobo* and *Shang* in order to improve on the effect of an advertisement (*Noda:* ¶0136).

### Response to Arguments

Applicant's arguments filed on March 29th, 2021 with respect to claims 12-14 and 19-21 in regards to the 35 USC § 101 directed to non-statutory subject matter have been fully considered and are persuasive.

Applicant's arguments filed on March 29th, 2021 with respect to claims 1-3, 6-8 and 11, 15-18 and

22-24 in regards to the 35 USC § 101 directed to non-statutory subject matter have been fully considered

but they are not persuasive.


Applicant argues in substance on page 16 of the Remarks filed March 29th, 2021 that "Applicant

respectfully maintains, however, that claim 1, for example, requires "a shopping cart body," "a server," "a

display screen," and a "camera or barcode scanner," where no court has held a shopping cart having

processing circuitry that implements a certain routine as an alleged abstract idea. Just because the

shopping cart recites operations performed by a computing device or a server does not mean the claims

are abstract."

Examiner respectfully disagrees. As explained in the 2019 PEG, the Office has shifted its approach

from the case-comparison approach in determining whether a claim recites an abstract idea and instead

uses enumerated groupings of abstract ideas. According to the 2019 PEG, the question of whether a claim

is "directed to" a judicial exception in Step 2A is now evaluated using a two-prong inquiry. Prong One asks

if the claim "recites" an abstract idea, law of nature, or natural phenomenon. Under that prong, the mere

inclusion of a judicial exception such as a method of organizing human activity in a claim means that the

claim "recites" a judicial exception (see October 2019 Update: Subject Matter Eligibility). Additionally, the

2019 PEG instructs examiners to refer to the groupings of abstract ideas enumerated in Section I of the

2019 PEG (i.e., mathematical concepts, certain methods of organizing human activities, and mental

processes) in order to identify abstract ideas. As noted above and in the previous office action, the claims

recite the abstract idea of "obtaining, identifying user information and generating product push

information based on user consumption interest data". This is an abstract idea because it is a concept of

an advertising, marketing or sales activities or behavior, which makes it a method of organizing human

activity (i.e., one of the groups of abstract ideas enumerated in Section I of the 2019 PEG). Accordingly,

with regarding to Step 2A, Prong One of the USPTO's 2019 Guidance for Determining Subject Matter

Eligibility, Examiner maintains the amended claims recites a judicial exception.

Applicant argues that claim 1 as recited possesses the elements of "a shopping cart body," "a

server," and "a display screen," However as currently claimed, the smart shopping cart does not positively

claim "a shopping cart body," "a server," and "a display screen." Even if Applicant positively claims these

additional elements, the additional elements are generic components and are merely used as a tool to

implement the abstract idea. Accordingly, Examiner maintains the claims do recite an abstract idea.


Additionally, the Applicant argues in substance on pages 16-17 of the Remarks filed March 29th,

2021 that "claim 1, as amended herein recite "a shopping cart system" that may provide corresponding

shopping advice to the user, and particularly relates to identifying and analyzing a food product placed

into the shopping cart and advising a user to buy or not to buy some other foods. Accordingly, amended

claim 1 is not simply applying human activity implemented by computer into a shopping cart, but provides

a technical improvement of operation of a smart shopping cart. In other words, claim 1 recites an

improvement in the field of smart shopping carts. Accordingly, the additional limitations reflect an

improvement in the functioning of a computer, or an improvement to another technology or technical

field, the claim integrates the judicial exception into a practical application and thus imposes a meaningful

limit on the judicial exception. Therefore, no further analysis is required. Thus, claims 1-3, 6-8, and 11 are

eligible under at least Step 2A."

Examiner respectfully disagrees. As explained in the 2019 PEG, the Office has shifted its approach

from the case-comparison approach in determining whether a claim recites an abstract idea and instead

uses enumerated groupings of abstract ideas. According to the 2019 PEG, the question of whether a claim

is "directed to" a judicial exception in Step 2A is now evaluated using a two-prong inquiry. Prong One asks

if the claim "recites" an abstract idea, law of nature, or natural phenomenon. Under that prong, the mere

inclusion of a judicial exception such as a method of organizing human activity in a claim means that the

claim "recites" a judicial exception (see October 2019 Update: Subject Matter Eligibility). Additionally, the

2019 PEG instructs examiners to refer to the groupings of abstract ideas enumerated in Section I of the

2019 PEG (i.e., mathematical concepts, certain methods of organizing human activities, and mental

processes) in order to identify abstract ideas. As noted above and in the previous office action, the claims

recite the abstract idea of "obtaining, identifying user information and generating product push

information based on user consumption interest data". This is an abstract idea because it is a concept of

an advertising, marketing or sales activities or behavior, which makes it a method of organizing human

activity (i.e., one of the groups of abstract ideas enumerated in Section I of the 2019 PEG). Accordingly,

with regarding to Step 2A, Prong One of the USPTO's 2019 Guidance for Determining Subject Matter

Eligibility, Examiner maintains the amended claims recites a judicial exception.

As recited in the above rejection, in Step 2A – Prong Two, the claims were analyzed to identify

whether there were any additional elements recited in the claim beyond the judicial exception(s) and

evaluated those additional elements to determine whether they integrate the exception into a practical

application of the exception. The 2019 PEG defines the phrase "integration into a practical application of

the exception" to require the additional element(s) or a combination of elements in the claim to apply,

rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception,

such that the claim is more than a drafting effort designed to monopolize the exception. Examiner notes

that the limitations using a shopping cart system to provide corresponding shopping advice to the user,

and particularly relates to identifying and analyzing a food product placed into the shopping cart and

advising a user to buy or not to buy some other foods are part of the abstract idea of "obtaining,

identifying user information and generating product push information based on user consumption

interest data". Applicant's claims are similar to (Electric Power group), collecting information, analyzing

it, and displaying certain results of the collection and analysis. Claims 1, 6, 11 and 16 include additional

elements such as *a smart shopping cart, a shopping cart body, a network, a server, at least one user interface shown in a display screen, one or more databases, and a camera/barcode scanner*. Although the claims recite these additional elements, the additional elements merely amount to no more than an instruction to apply the abstract idea on a computer, or merely uses the computer as a tool to perform the abstract idea. These additional elements are described at a high level of generality in the Application's specification and merely describes the individual elements in generic terms and amount to no more than an instruction to apply the abstract idea using a generic computer or merely using a computer as a tool to perform the abstract idea. The specification should disclose sufficient details such that one of ordinary skill in the art would recognize the claimed invention as providing an improvement, and the claim itself must reflect the improvement in technology (see MPEP 2106.04(a)(1)). Accordingly, Examiner maintains the claims do not recite additional elements that integrate the judicial; exception into a practical application.

The instant claims are not directed to improving "the existing technological process" requiring the generic components to operate in an unconventional manner to achieve an improvement in computer functionality or requiring the non-conventional and non-generic arrangement of known, conventional pieces to improve a technical process. These arguments are directed to the improvement of the abstract idea (i.e. "obtaining, identifying user information and generating product push information based on user consumption interest data") and are not directed to a problem specifically arising in the realm of computers or networks as the current invention address a business challenge that is not particular to the Internet/technology. It is noted that receiving or transmitting data over a network, e.g., using the Internet to gather data is considered to be well-understood, routine, and conventional computer functions (see MPEP 2106.05), "claiming the improved speed or efficiency inherent with applying the abstract idea on a computer" does not provide an inventive concept (see MPEP 2106.05), and claims reciting new abstract ideas for which there is no prior art (i.e., an "inventive concept" or novelty) is not the test for patent

eligibility (see MPEP 2106.05). Accordingly, Examiner maintains the additional elements are merely being used to apply the abstract idea to a technological environment and the additional elements alone or in ordered combination do not render the claim as being significantly more than the underlying abstract idea.

Applicant submits on page 17 of the Remarks filed March 29th, 2021 that the claims as amended do not preempt "basic tools of scientific and technological work," nor do they even preempt operation a smart shopping cart.

Examiner respectfully disagrees. The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability. Alice, 134 S. Ct at 2354 ("We have described the concern that drives this exclusionary principal as one of pre-emption"). For this reason, questions on preemption are inherent in and resolved by the § 101 analysis. The concern is that "patent law not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity." Id. (internal quotations omitted). In other words, patent claims should not prevent the use of the basic building blocks of technology—abstract ideas, naturally occurring phenomena, and natural laws. While preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility. In this case, the attempt to limit the breadth of the claims does not change the conclusion that the claims are directed to patent ineligible subject matter. Where a patent's claims are deemed only to disclose patent ineligible subject matter under the Mayo framework, as they are in this case, preemption concerns are fully addressed and made moot. *Ariosa Diagnostics, Inc. v. Sequenom, Inc., 2015 U.S. App. LEXIS 9855, 17-18 (Fed. Cir. June 12, 2015).* For these reasons the rejection under 35 USC § 101 directed to non-statutory subject matter set forth in this office action of claims XXXXX are maintained.

Examiner agrees with applicant that dependent claims 12-14 and 19-21 relate to an abstract idea

integrated into a practical application. Therefore, the previous 101 rejections of claims 12-14 and 19-21

are withdrawn.


Applicant's arguments filed March 29th, 2021, with respect to the **35 USC § 103** rejections have

been fully considered but are mostly moot in view of the new 35 USC §103 rejections applied to applicant's

amended claims. While, Applicant argues on pages 21-22 of the Remarks that *Cheng* fails to teach or

suggest "wherein the server is configured to receive the image of the product or the scanned barcode

information" and "obtain food information of the product" Examiner respectfully disagrees. As indicated

above, Cheng discloses a monitoring device collecting the commodity image information and sending the

on-site information to the server wherein the on-site information includes the commodity image

information (¶¶0019-0020, ¶0047). Cheng further teaches the server receiving the on-site information

sent by the intelligent shopping cart, comparing the on-site information with the original information, and

sending the prompt information after the comparison to the touchscreen computer of the shopping cart

(¶0014, ¶0019).. Therefore, examiner maintains that *Cheng* teaches these claimed limitations.

Applicant's additional arguments are moot in view of the new 103 rejections applied to the

amended claims.


### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2003/0165193 A1 *(Chen et al.)* discloses a motion detection method is used to abstract

multiple moving objects. The motion detection method uses a first frame and a second frame to locate

the moving objects appearing in a fixed scene. The method includes calculating a difference of each pixel

between the first frame and the second frame, comparing each difference with a first threshold value for

generating a plurality of first contours, comparing each difference with a second threshold value for

generating a plurality of second contours, picking any of the second contours which overlapped with the

first contours for generating corresponding moving blocks, determining whether the pixels located

outside the moving blocks are background pixels, and comparing the parameter of each background pixel

located inside the moving blocks with its corresponding background value for determining pixels related

to the moving objects.

US 2015/0073925 A1 (*Renfroe*) discloses in an embodiment, the customer profiles may be used

to establish customer rankings. For example, the customer profile may store information relating to the

frequency of customer visits to the establishment, the total amount of money spent, the amount of

money spent per visit, the amount of profit made on the customer, the number of guests associated with

the customer during the visits, the time periods of the visits, the type of customer visit (e.g., lunch, dinner,

event hosting, etc.), the type of items ordered (e.g., expensive items versus lower cost items, high priced

brand items, etc.), the amount of items ordered, and the like. Based on one or more of these

considerations, the customer may be ranked amongst a plurality of rankings. For example, a customer

who spends under a threshold amount of money in a given time period may be ranked as a standard

customer. A customer who spends at or above the threshold in the given time period may be ranked as a

VIP customer. Similarly, customer rankings may include multiple levels. For example, the customers may

be ranked as bronze, silver, gold, or platinum customers based on one or more of the considerations. The

rankings may be used to provide variable levels of service, discounts, and/or incentives to the customers.

US 2019/0118844 A1 (*Li et al.* [previously recited]) discloses a smart shopping cart, comprising a

shopping basket provided with a cover plate which may be tilted toward the interior of the shopping

basket to form an entrance; and the shopping cart further comprises a scanner configured to scan a

barcode of a commodity placed on the cover plate to acquire an identity and/or a price of the commodity;

a first scale configured to measure a weight of the commodity; a controller configured to generate

settlement information of the commodity based on at least one of the identity, the price, and the weight

of the commodity, and add the settlement information to a settlement list to update the settlement list;

and a display comprising a first display area on which the settlement list is able to be displayed. The

present disclosure further discloses a smart shopping system including the shopping cart described above.

US 2018/0204111 A1 (*Zadeh et al.)* discloses an example of such map can be visualized in one

embodiment, as color (or grayscale graduation) mapping in which high possibility (for membership values)

areas (e.g., a pixel or range in (x,η) plane), are associated with (for example) darker color, and low

possibility (for membership values) areas are associated with (for example) lighter color.

US 2012/0226556 A1 (*Itagaki et al.* [previously recited]) discloses a shopping cart includes a cart,

a display, a registration and a display control unit. The cart configured to convey commodities. The display

mounted on the cart. The registration unit configured to register a customer who operates the cart. The

display control unit configured to display on the display premium infatuation indicating premium which is

offered to the customer registered by the registration unit within the premiums offered to customers

when purchasing commodity.

Reference U of the Notice of References Cited (*Gurumurthy, Sasikumar*) discloses the intelligent

shopping basket is a smart trolley which uses an embedded chip with a barcode scanner and a battery to

allow users to self-egress at the supermarkets. The main theme of the paper is to decrease the time

consumption in the billing counters at the supermarkets by designing a smart shopping basket which

allows users to checkout from the malls and increase the time of Production. The IoT kit which contains

the barcode scanner will automatically detects the product dropped into the basket using ultrasonic

sensor.

Any inquiry concerning this communication or earlier communications from the examiner should

be directed to OMAR HANI KAZIMI whose telephone number is (571)272-2865. The examiner can

normally be reached on M-F: 7:30AM - 4:30PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO

supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the

USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Jeffrey A. Smith can be reached on (571)272-6763. 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    https://ppair-

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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.

Respectfully submitted,

/O.H.K./
Examiner, Art Unit 3625

/Jeffrey A. Smith/
Supervisory Patent Examiner, Art Unit 3625

# REMARKS

As of entry of this Response, claims 1-3, 6-8, 11, 13-18, and 20-24 remain pending in the present application, with claims 1, 6, and 16 being independent. Claims 1-3, 6-8, 16, 17, 19, and 20 are currently amended herein. Claims 12 and 19 are canceled herein without waiver, disclaimer, or prejudice. Applicant reserves the right to present these claims, or variants thereof, in continuing applications. No claims are newly added herein. Applicant submits that no new matter subject matter has been introduced through these amendments. Reconsideration and allowance of the pending application and claims are respectfully requested.

## I.     Objections to the Claims

The Office Action (p. 4) indicates that claims 1-3, 11, and 13-15 are objected to for various informalities. Applicant notes that claim 1 is amended herein to address the informalities identified in the Office Action. For at least this reason, Applicant respectfully requests that the objections of claims 1-3, 11, and 13-15 be withdrawn.

## II.     Objection to the Specification

The Office Action (p. 4) indicates that the specification stands objected to for various informalities. Applicant notes that the specification is amended herein to address the informalities identified in the Office Action. For at least this reason, Applicant respectfully requests that the objection to the specification be withdrawn.

**III.    Claims 1-3, 11, and 12-24 are Patentable under 35 U.S.C. § 112(b)**

The Office Action (pp. 4-5) indicates that claims 1-3, 11, and 12-24 stand rejected under 35 U.S.C. § 112(b) for various informalities. Applicant notes that claims 1, 7, 8, and 11 are amended herein to address the informalities regarding the terms "user interface," "user identity information," and "display screen," identified at pages 4-5 of the Office Action. For at least this reason, Applicant respectfully requests that the objections of claims 1-3, 11, and 12-24 be withdrawn.

**IV.    Claims 1-3, 6-8, 11, 15-18, and 22-24 are Patentable under 35 U.S.C. § 101**

The Office Action (p. 7) indicates that claims 1-3, 6-8, 11, 15-18 and 22-24 stand rejected as allegedly being directed to an abstract idea. Further, the Office Action (pp. 10-11) indicates that claims 12-14 and 19-21 are eligible. Applicant and Applicant's undersigned representative thank the examiner for indicating the eligible subject matter. Without addressing the merits of the rejections, and solely for the sake of expediting prosecution, Applicant notes that claims 1, 6, and 11 are amended herein to incorporate the features of eligible claims 12 and 19, respectfully, and thus the amended claims 1, 6 and 11 are eligible. Dependent claims are therefore eligible as well. Withdrawal of the rejections of the claims under 35 U.S.C. § 101 is therefore respectfully requested

**V.    The Claims are Patentable under 35 U.S.C. § 103 over *Cheng, Babu, Lobo, Shang, Schaffernoth,* and *Noda***

The Office Action (p. 12) indicates that claims 1, 3, 6, 8, 16, and 18 stand rejected under 35 U.S.C. § 103 as allegedly being obvious over U.S. Patent Publication No. 2019/0279185 A1 (hereinafter *"Cheng"*) in view of U.S. Patent Publication No. 2016/0140644 A1 (hereinafter *"Babu"*). Further, the Office Action indicates that claims 2, 7, 11, and 17 stand rejected under 35

U.S.C. § 103 as being unpatentable over *Cheng* in view of *Babu* and U.S. Patent Publication No. 2019/0037549 A1 (hereinafter "*Lobo*"), claims 13 and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over *Cheng* in view of *Babu* and U.S. Patent No. 10,761,856 (hereinafter "*Ren*"), claims 15 and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over *Cheng* in view of *Babu* and U.S. Patent Publication No. 2018/0285465 A1 (hereinafter "*Schaffernoth*"), claim 23 stands rejected under 35 U.S.C. § 103 as being unpatentable over *Cheng* in view of *Babu*, *Lobo*, and U.S. Patent No. 10,147,129 B1 (hereinafter "*Shang*"), and claim 24 stands rejected under 35 U.S.C. § 103 as being unpatentable over *Cheng* in view of *Babu*, *Lobo*, *Shang*, and U.S. Patent Publication No. 2001/0054014 A1 (hereinafter "*Noda*").

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103, the Examiner must show that each and every element of the claim is described or suggested by the prior art or would have been obvious in view of the prior art. *See In re Fine*, 837 F.2d 1071, 1073-1074 (Fed. Cir. 1988); *Ex Parte Wada and Murphy*, Appeal 2007-3733 (BPAI 2008); *See also, KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398, 411 (2007) (claim deemed obvious to one of ordinary skill where all claim elements were disclosed in the cited prior art references). In addition, "[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Applicant respectfully requests that the rejections of claims 1, 3, 6, 8, and 11 be withdrawn for at least the following reasons.

## A.    Claims 1, 3, 6, 8, and 11

Claim 1, as amended, recites among other things, a server to "combine foods placed in the shopping cart body in pairs, and query, for each  food combination pair, an edible collocation information database according to the food information to obtain edible collocation information by: querying the edible collocation information database to identify that the food combination pair has a good health characteristic when eaten together; or querying the edible collocation information database to identify that the food combination pair should not be eaten together."

Support for the amendment can be found in FIGS. 5 and 6 of the specification and corresponding description thereof, e.g., "After obtaining the food information of food in the products placed by the user in the shopping cart body, the server starts to combine the foods in pairs, and the combined list will be searched for in the database, and the corresponding product combinations are retrieved as the symbol ×, the symbol √ or symbols √√. The edible collocation information in the form of the corresponding symbol and text description will be displayed on the display unit, thereby achieving the purpose of reminding the user."

Applicant respectfully submits that *Cheng* does not teach or even suggest the above quoted elements, and *Babu*, the newly cited prior art document, fails to cure the deficiencies of *Cheng*.

In particular, according to *Babu*, *Babu* involves, after the user inputs information of particular product, determining which products are further required according to the user's profile and recommending these products to the user accordingly.  However, this procedure relates to providing recommendation of other products according to the existing selected product.  Claim 1, on the other hand, relates to pairing existing products and providing edible collocation information regarding each pair of the existing products.

Accordingly, none of *Cheng, Babu, Lobo, Ren, Schaffernoth, Shang,* and *Noda*, or any combination thereof, teaches or suggests the above quoted elements, and thus the amended claim

1 is allowable. Claims 6 and 11, although being different in scope from claim 1, recite similar elements discussed above, and thus are allowable for at least similar reasons. Dependent claims are allowable at least by virtue of their dependency. Withdrawal of the obviousness rejections is therefore respectfully requested.

## VI. No Waiver

Applicant's arguments and amendments are without prejudice, waiver, or disclaimer. Applicant has not addressed each specific rejection of the dependent claims because Applicant submits that the independent claims are allowable over the documents of record, as discussed above. Applicant has not acquiesced to any such rejection and reserves the right to address the patentability of any additional claim elements in the future.

## CONCLUSION

It is requested that all outstanding objections and rejections be withdrawn, and that this application and all presently pending claims be allowed to issue. If the Examiner has any questions or comments regarding this Response, the Examiner is encouraged to telephone the undersigned counsel of Applicant.

Respectfully submitted,

/Kenneth A. Knox/

_____

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**IN THE CLAIMS:**

Please amend the claims as indicated below. The language being added is underlined ("__"), and the language being deleted contains a strikethrough ("—") or double brackets ("[[ ]]").

1.      (Currently Amended) A smart shopping cart system, comprising:

a smart shopping cart comprising a shopping cart body, <u>a server, and a display screen, wherein</u>:

the smart shopping cart <del>being</del> <u>is</u> configured to collect user information, transmit <u>the</u> user information over a network to [[a]] <u>the</u> server, and cause at least one user interface to be shown in [[a]] <u>the</u> display screen;

the server, <del>the server being</del> <u>is</u> configured to receive the user information, identify user identity information from the user information, query a user consumption history database based on the user identity information to obtain user consumption history data, generate user consumption interest data according to the user consumption history data, generate product push information according to the user consumption interest data, and send the product push information to [[a]] <u>the</u> display screen;

<u>the smart shopping cart further comprises</u> at least one of a camera configured to capture an image of a product placed into the shopping cart body and transmit the image of the product to the server<del>, and a barcode scanner configured to scan a barcode of the product placed into the shopping cart body and transmit scanned barcode information to the server</del>;

wherein the server is further configured to:

receive the image of the product <del>or the scanned barcode information</del> and obtain food information of the product based on the image;

- 3 -

combine foods placed in the shopping cart body in pairs, and query, for each

food combination pair, an edible collocation information database according to the food

information to obtain edible collocation information by: querying the edible collocation

information database to identify ~~a food that is more nutritious than the product placed into~~

~~the shopping cart body by comparing nutritional characteristics of the food to that of the~~

~~product placed in the shopping cart body~~ that the food combination pair has a good health

characteristic when eaten together; or querying the edible collocation information database

to identify ~~a pair of food items~~ that the food combination pair should not be eaten together

~~based on the product placed in the shopping cart body~~; and

cause the edible collocation information to be presented in the at least one

user interface shown in the display screen, the edible collocation information comprising

the food that is more nutritious than the product, or the food that should not be eaten

together with the product; and

the display screen~~, the display screen being~~ is configured to transition between the

at least one user interface comprising the product push information and the at least one user

interface comprising the edible collocation information; and

the server is further configured to, in response to receipt of the image of the product,

identify a placement of the product in the shopping cart body through motion identification and

detection, wherein the motion identification and detection comprises determining that a proportion

of pixels have changes in gray values between adjacent frame images that exceed a threshold size.

2.    (Currently Amended) The smart shopping cart system according to claim 1, wherein the smart shopping cart ~~comprises the camera, and the smart shopping cart~~ is further configured to collect the user information by capturing a facial image with the camera.

3.    (Currently Amended) The smart shopping cart system according to claim 1, wherein the display screen is a touch screen, and the smart shopping cart is configured to collect the user information by obtaining <u>the</u> user information input through the touch screen.

4-5.   (Canceled)

6.    (Currently Amended) A system, comprising:

at least one computing device having at least one hardware processor, an input/output (I/O) interface, and a memory storing a user consumption history database and an edible collocation information database thereon;

program instructions stored in the memory that, when executed by the at least one hardware processor, direct the at least one computing device to:

receive, by the I/O interface, user information associated with a user of a smart shopping cart;

identify, by the at least one hardware processor, user identity information from the user information;

access, by the at least one hardware processor via that I/O interface, the user consumption history database to query the user consumption history database based on the user identity information to obtain user consumption history data;

generate, by the at least one hardware processor, user consumption interest data according to user consumption history data;

generate, by the at least one hardware processor, a first user interface for display of product push information according to the user consumption interest data;

send, by the I/O interface, the first user interface comprising the product push information to the smart shopping cart for display on a display screen;

receive, by the I/O interface, an image of a product ~~or scanned barcode information~~;

identify, by the I/O interface, the image to obtain food information in the product;

~~accessing~~ combine foods placed in the shopping cart body in pairs, and access, by the at least one hardware processor via the I/O interface, the edible collocation information database to query, for each food combination pair, the edible collocation information database according to the food information to obtain edible collocation information by: querying the edible collocation information database to identify ~~a food that is more nutritious than the product placed into the smart shopping cart by comparing nutritional characteristics of the food to that of the product placed in the smart shopping cart~~ that the food combination pair has a good health characteristic when eaten together; or querying the edible collocation information database to identify ~~a pair of food items~~ that the food combination pair should not be eaten together ~~based on the product placed in the smart shopping cart~~;

generate, by the at least one hardware processor, a second user interface comprising the edible collocation information, the edible collocation information comprising the food that is more nutritious than the product, or the food that should not be eaten together with the product; [[and]]

send, by the I/O interface, the second user interface comprising the edible collocation information to the smart shopping cart for display in the display screen;

receive, by the server, the image of the product placed into the shopping cart body captured by a camera; and

in response to receipt of the image of the product, identify a placement of the product in the shopping cart body through motion identification and detection, wherein the motion identification and detection comprises determining that a proportion of pixels have changes in gray values between adjacent frame images that exceed a threshold size

7.      (Currently Amended) The system according to claim 6, wherein the at least one computing device is further configured to receive an image of a user face, and identify the image of the user face to obtain the user ~~identify~~ identity information.

8.      (Currently Amended) The system according to claim 6, wherein the at least one computing device is further configured to receive login information input on the smart shopping cart, and obtain the user ~~identify~~ identity information according to the login information.

9-10.    (Canceled)

11.    (Previously Presented) A smart shopping method, comprising:

providing the smart shopping cart system according to claim 1;

capturing, by the smart shopping cart, an image of a user face;

performing, in the server:

identifying the image of the user face to obtain the user identity information;

querying the user consumption history database based on the user identity information to obtain the user consumption history data;

generating the user consumption interest data according to the user consumption history data; and

generating the product push information according to the user consumption interest data; and

displaying, by the smart shopping cart, the product push information in the at least one user interface.

12.    (Previously Presented) The smart shopping cart system according to claim 1, wherein:

the smart shopping cart system comprises the camera configured to capture the image of the product placed into the shopping cart body and transmit the image of the product to the server; and

wherein the server is further configured to, in response to receipt of the image of the product, identify a placement of the product in the shopping cart body through motion identification and detection, wherein the motion identification and detection comprises determining that a proportion of pixels have changes in gray values between adjacent frame images that exceed a threshold size.

13.    (Previously Presented) The smart shopping cart system according to claim 12, wherein the server is further configured to, in response to the placement of the product in the shopping cart body:

compare adjacent frame images captured by and received from the camera;

determine a changed region in the image based on depth information;

extract the changed region as a candidate product region;

execute a product identification model on the candidate product region as extracted to identify a type of the product placed into the shopping cart body; and

obtain the food information of the product according to the product identification model, wherein the product identification model is pre-trained using samples of various types of products.

14.    (Previously Presented) The smart shopping cart system according to claim 13, wherein the server is further configured to, in response to the type of the product being successfully identified, cause the at least one user interface shown in the display screen to display the product placed into the shopping cart body, the at least one user interface comprising product information associated with the product.

15.    (Previously Presented) The smart shopping cart system according to claim 1, wherein the edible collocation information database comprises a plurality of products and a unique identifier associated with each of the plurality of products, the edible collocation information database further comprising a plurality of combinations of the products indicating whether or not a first subject of the products should be eaten with a second subset of the products.

16.     (Currently Amended) A method, comprising:

providing a smart shopping cart comprising a shopping cart body and a display screen;

collecting, by the smart shopping cart, user information, transmitting the user information over a network to a server, and causing at least one user interface to be shown in the display screen;

receiving, by the server, the user information, identifying user identity information from the user information, querying a user consumption history database based on the user identity information to obtain user consumption history data, generating user consumption interest data according to the user consumption history data, generating product push information according to the user consumption interest data, and sending the product push information to the smart shopping cart for display on [[a]] the display screen;

~~providing at least one of~~ capturing, by a camera, ~~configured to capture~~ an image of a product placed into the shopping cart body and transmit the image of the product to the server; ~~and a barcode scanner configured to scan a barcode of the product placed into the shopping cart body and transmit scanned barcode information to the server;~~

receiving, by the server, the image of the product ~~or the scanned barcode information~~ and obtaining, by the server, food information of the product based on the image;

querying, by the server, an edible collocation information database according to the food information to obtain edible collocation information by:

combining foods placed in the shopping cart body in pairs, and querying, for each food combination pair, the edible collocation information database to identify ~~a food that is more nutritious than the product placed into the shopping cart body by~~

~~comparing nutritional characteristics of the food to that of the product placed in the~~ ~~shopping cart body~~ that the food combination pair has a good health characteristic when eaten together; or

querying the edible collocation information database to identify ~~a pair of~~ ~~food items~~ that the food combination pair should not be eaten together ~~based on the product~~ ~~placed in the shopping cart body~~;

causing, by the server, the edible collocation information to be presented in the at least one user interface shown in the display screen, the edible collocation information comprising the food that is more nutritious than the product, or the food that should not be eaten together with the product; [[and]]

causing, by the server, the display screen to transition between the at least one user interface comprising the product push information and the at least one user interface comprising the edible collocation information; and

in response to receipt of the image of the product, identifying, by the server, a placement of the product in the shopping cart body through motion identification and detection, wherein the motion identification and detection comprises determining that a proportion of pixels have changes in gray values between adjacent frame images that exceed a threshold size.

17.     (Currently Amended) The method according to claim 16, wherein ~~the smart~~ ~~shopping cart as provided comprises the camera, and~~ the method further comprises collecting, by the smart shopping cart, the user information by capturing a facial image with the camera.

18.    (Previously Presented) The method according to claim 16, wherein the display screen is a touch screen, and the method further comprises collecting, by the smart shopping cart, the user information by obtaining the user information input through the touch screen.

19.    (Currently Amended) The method according to claim 16, wherein: the smart shopping cart as provided comprises the camera configured to capture the image of the product placed into the shopping cart body and transmit the image of the product to the server; and the method further comprises, in response to receipt of the image of the product, identifying, by the server, a placement of the product in the shopping cart body through motion identification and detection, wherein the motion identification and detection comprises determining that a proportion of pixels have changes in gray values between adjacent frame images that exceed a threshold size.

20.     (Currently Amended) The method according to claim [[19]] 16, further comprising, in response to the placement of the product in the shopping cart body:

comparing, by the server, adjacent frame images captured by and received from the camera;

determining, by the server, a changed region in the image based on depth information;

extracting, by the server, the changed region as a candidate product region;

executing, by the server, a product identification model on the candidate product region as extracted to identify a type of the product placed into the shopping cart body; and

obtaining, by the server, the food information of the product according to the product identification model, the product identification model being pre-trained using samples of various types of products.


21.     (Previously Presented) The method according to claim 20, further comprising, in response to the type of the product being successfully identified, causing, by the server, the at least one user interface shown in the display screen to display the product placed into the shopping cart body, the at least one user interface comprising product information associated with the product.


22.     (Previously Presented) The method according to claim 16, wherein the edible collocation information database comprises a plurality of products and a unique identifier associated with each of the plurality of products, the edible collocation information database further comprising a plurality of combinations of the products indicating whether or not a first subject of the products should be eaten with a second subset of the products.

23.     (Previously Presented) The method according to claim 17, further comprising:

identifying, by the server, a user of the smart shopping cart, through matching using the facial image;

sorting, by the server, products the user has purchased in an order from a high purchase frequency to a low purchase frequency according to the user consumption history data;

identifying, by the server, recommended products from the products with a purchase frequency higher than other ones of the products; and

generating, by the server, the product push information such that the product push information comprises the recommended products and prices for the recommended products to be presented in promotion information.


24.     (Previously Presented) The method according to claim 23, wherein:

the promotion information comprises a discount for a respective one of the recommended products; and

the promotion information is generated such that a higher the purchase frequency of the respective one of the recommended products, the higher the discount given to the user.

# NOTICE OF ALLOWANCE AND FEE(S) DUE

24504        7590        08/30/2021
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| EXAMINER |
| --- |
| GARG, YOGESH C |

| ART UNIT | PAPER NUMBER |
| --- | --- |
| 3625 | |

DATE MAILED: 08/30/2021

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| --- | --- | --- | --- | --- |
| 16/420,943 | 05/23/2019 | Yanfu LI | 100601-1340 | 9186 |

TITLE OF INVENTION: SMART SHOPPING CART, SERVER, SMART SHOPPING SYSTEM AND METHOD

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
| --- | --- | --- | --- | --- | --- | --- |
| nonprovisional | UNDISCOUNTED | $1200 | $0.00 | $0.00 | $1200 | 11/30/2021 |

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THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

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For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

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PTOL-85 (Rev. 02/11)

# PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 16/420,943 | 05/23/2019 | Yanfu LI | 100601-1340 | 9186 |

TITLE OF INVENTION: SMART SHOPPING CART, SERVER, SMART SHOPPING SYSTEM AND METHOD

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1200 | $0.00 | $0.00 | $1200 | 11/30/2021 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| GARG, YOGESH C | 3625 | 705-026630 |

**1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).**

❏ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❏ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

**2. For printing on the patent front page, list**

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

**3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)**

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❏ Individual ❏ Corporation or other private group entity ❏ Government

**4a. Fees submitted:** ❏ Issue Fee ❏ Publication Fee (if required) ❏ Advance Order - # of Copies _____

**4b. Method of Payment:** *(Please first reapply any previously paid fee shown above)*

❏ Electronic Payment via EFS-Web    ❏ Enclosed check    ❏ Non-electronic payment by credit card (Attach form PTO-2038)

❏ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

**5. Change in Entity Status** (from status indicated above)

❏ Applicant certifying micro entity status. See 37 CFR 1.29

❏ Applicant asserting small entity status. See 37 CFR 1.27

❏ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____    Date _____

Typed or printed name _____    Registration No. _____

PTOL-85 Part B (08-18) Approved for use through 01/31/2020      OMB 0651-0033      U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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24504          7590          08/30/2021

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ATLANTA, GA 30339

| EXAMINER |
|---|
| GARG, YOGESH C |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3625 | |

DATE MAILED: 08/30/2021

# Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
## (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

# OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

## Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

| | Application No. | Applicant(s) |
|---|---|---|
| *Notice of Allowability* | 16/420,943 | LI et al. |
| | Examiner | Art Unit | AIA (FITF) Status |
| | YOGESH C GARG | 3625 | Yes |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to 08/04/2021.

   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-3,6-8,11,13-18 and 20-24 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   **Certified copies:**

   a) ☐All    b) ☐ Some*    c) ☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☑ Notice of References Cited (PTO-892)

2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ .

3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____ .

4. ☑ Interview Summary (PTO-413), Paper No./Mail Date. 08/24/2021.

5. ☑ Examiner's Amendment/Comment

6. ☑ Examiner's Statement of Reasons for Allowance

7. ☐ Other _____ .

/YOGESH C GARG/
Primary Examiner, Art Unit 3625

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the

first inventor to file provisions of the AIA.

1.      Applicant's amendment filed 08/04/2021 is entered. Claims 1-3, 6-8, 16-17, 19-20 are

amended. Claims 4-5, and 9-10 are previously canceled. The Remarks filed, see page 16,

indicated that claims 12 and 19 are canceled but the claims filed do not indicate that. In order to

correct the error an Examiner's amendment, see below, is issued.

2.      Amendments to Specification filed 08/04/2021 is entered. The amendments to

paragraphs 0022 and 0083 as directed to matters of form not affecting the scope of the

invention. Accordingly, objection to Specification is withdrawn

***Response to Arguments***

3.1.    Objections to the claims 1-3, 11, and 13-15 are withdrawn in view of the current

amendments made to independent claim 1.

3.2.    Rejection of claims 1-3, 7-8, 11, and 12-24 under 35 U.S.C. § 112(b) are withdrawn in

view of the current amendments made to claims 1, 7, and 8, and 16.

3.3.    Rejection of claims 1-3, 6-8, 16-17, 19-20 under 35 USC 101: Applicant's arguments

filed 08/04/2021, see page 17, are persuasive and rejection is withdrawn, because the

independent claims 1, 6, and 16 are amended to include the limitations from claim 12

comprising that a server/ processor/  configured to, in response to receipt of the image of the

product, identify a placement of the product in the shopping cart body through motion

identification and detection, wherein the motion identification and detection comprises

determining that a proportion of pixels have changes in gray values between adjacent frame

images that exceed a threshold size to render claims 1, 6, and patent eligible as submitted in

the Non-Final rejection mailed 05/11/2021.


3.4.    Rejection of claims 1-3, 6-8, 16-17, 19-20 under 35 USC 103: Applicant's arguments

filed 08/04/2021, see pages 17-20 are persuasive in view of the current amendments to

independent claims 1, 6, and 16 and are withdrawn.


## EXAMINER'S AMENDMENT

4.    An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.


Authorization for this examiner's amendment was given in an interview with Mr. Kenneth

A. Knox on 08/24/2021.


The application has been amended as follows:


Claim 12 (Canceled)


Claim 13 (currently amended). The smart shopping cart system according to claim [[12]]

13, wherein the server is further configured to, in response to the placement of the product in

the shopping cart body:

compare adjacent frame images captured by and received from the camera;

determine a changed region in the image based on depth information;

extract the changed region as a candidate product region;

execute a product identification model on the candidate product region as extracted

to identify a type of the product placed into the shopping cart body; and

obtain the food information of the product according to the product identification

model, wherein the product identification model is pre-trained using samples of various

types of products.

Claim 19 (Canceled)

### *Allowable Subject Matter*

5.      Claims 1-3, 6-8, 16-17, 19-20 allowed. Claims 1, 6, and 16 are independent claims. 2-3,

11, and 13-15 depend from claim 1. Claims 7-8 depend from claim 6, and claims 17, 18, 20-24

depend from claim 16.

The following is an examiner's statement of reasons for allowance:

Examiner has conducted Keyword Search in East for USPG-PUB, USPAT, USOCR,

FPRS, EPO, JPO, Derwent, IBM_TDB databases, searched Dialog database or NPL

references.

Examiner believes that the record of the prosecution as a whole does make clear his or

her reasons for allowing a claim or claims. The examiner's actions including Non-Final rejection

mailed 05/11/2021, Examiner's amendment, see above, and the applicant's replies filed

08/04/2021 including amendments to independent claims 1, 6, and 16 to overcome rejections

under 35 USC 101 and 35 USC 103 outlining the reasons for overcoming the rejections

submitted in the Office Action filed 05/11/2021 make evident the reasons for allowance,

satisfying the "record as a whole" proviso of the rule.

The prior art of record, alone or combined, including the references Cheng
[US20190279185 A1], Babu et al. [US20160140644 A1], Lobo et al. [US20190337549A1], Ren
et al. [USPatent 10,671, 856 B1], Schaffernoth et al. [US 20180285465], Shang et al. [US
Patent 10,147,129B1], and Noda et al. [US20010054014 A1] and the references Kim et al.
[US20120284132 A1], Pedley et al. [US20150120475 A1], Byron et al. [US20170228364 A1],
and Mathew [US20150088642 A1] searched and cited hereto for new limitations added in the
current amendments to independent claims 1, 6, and 16 , neither teaches nor renders obvious
specifically the limitations, as a whole, receive  the image of the product and obtain food
information of the product based on the image,  combine foods placed in the shopping cart body
in pairs, and query, for each food combination pair, an edible collocation information database
according to the food information to obtain edible collocation information by querying the edible
collocation information database to identify that the food combination pair has a good health
characteristic when eaten together, or querying the edible collocation information database
to identify that the food combination pair should not be eaten together, and cause the edible
collocation information to be presented in the at least one user interface shown in the display
screen.


Any comments considered necessary by applicant must be submitted no later than the
payment of the issue fee and, to avoid processing delays, should preferably accompany the
issue fee.  Such submissions should be clearly labeled "Comments on Statement of Reasons
for Allowance."


## Conclusion

6.      The prior art made of record and not relied upon is considered pertinent to
applicant's disclosure.

(i)     Kim et al. [US20120284132 A1] discloses a smart shopping cart equipped with

barcode reader in communication with a server so that the product barcode is read by the

barcode reader, provided to the server so that the server can provide and display information on

the product [see paras 0115, 0120, and 0122].

(ii)     Pedley [US20150120475 A1; see paras 0021] discloses a shopping cart 10

connected via communication network to a server 50, wherein a communication device 20

scans a QR code from a product transmits to the server and the server provides information

about the product and displays the information on the virtual cart.

(iii)     Byron et al. [US20170228364 A1; see paras 0016-0017, 0023 and Fig1-.3]

discloses providing and displaying food/item/action repairs such as combination of Garlic and

the action to be taken is to smash flat for a recipe and so on but, as recited in independent

claims 1, 6, and 16, does not teach a combination of two food items which as a combination are

healthy combination.

(iv)     Acker, JR.et al. [US20140214577 A1; see paras 0041 and 0068] discloses a

shopping process wherein a product scan module 112 monitors data from a camera device and

identifies a information related to a scanned product to be purchased using image recognition

software  and they are processed by a remote server. Further a cart communication device

monitors and reports changes in incremental weights to a shopping cart basket and

communicating the change I weights to a remote server.

(v)     Mathew [US 20150088642 A1] discloses that an intelligent shopping cart

recognizes a registered customer's mobile device in a retail store and based on the recognition

communicates with a remote server to get a layout map of the store providing the customer

paths to pick up items to be purchased and the intelligent shopping cart matches the food items

with the customer's preferences and such notifications are provided to the customer on the

display of the shopping cart. The intelligent shopping cart also explains why a food product can

be a mismatch item.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH C GARG whose telephone number is (571)272-6756. The examiner can normally be reached on Max-Flex.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A Smith can be reached on 571-272-6763. 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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/YOGESH C GARG/
Primary Examiner, Art Unit 3625