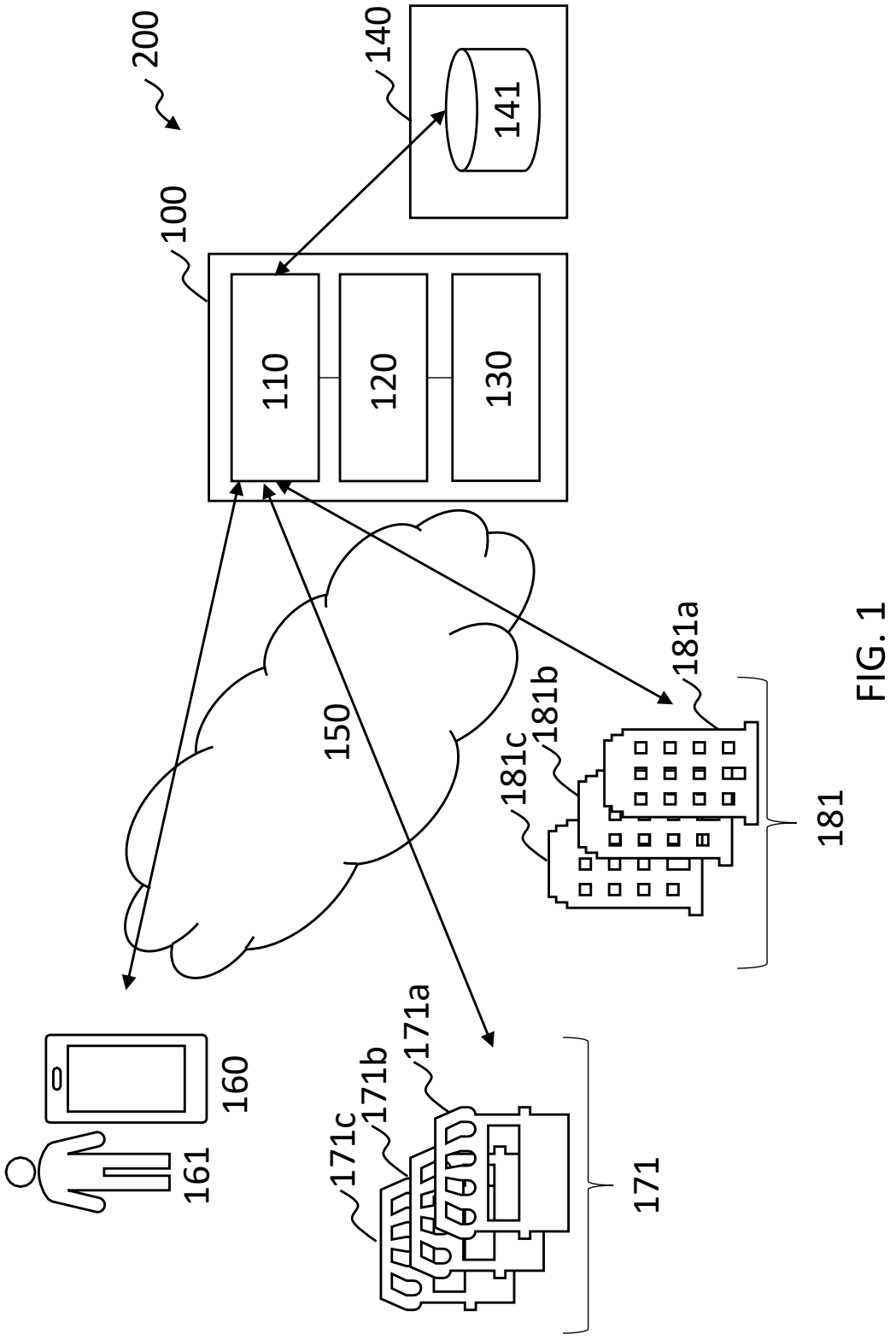

200
140
141
100
110
120
130
150
181a
181b
181c
181
160
161
171a
171b
171c
171

FIG. 1

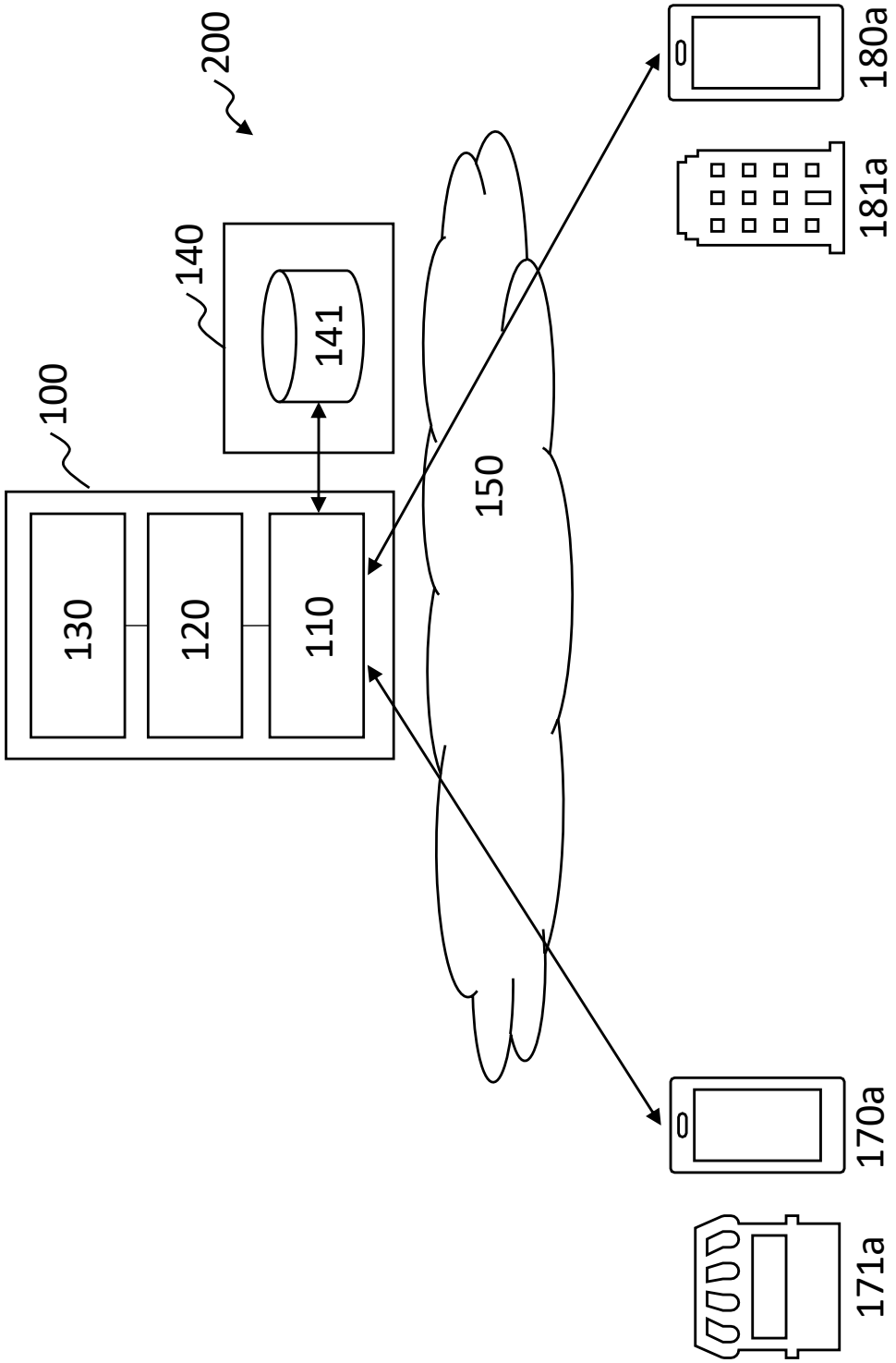


FIG. 2

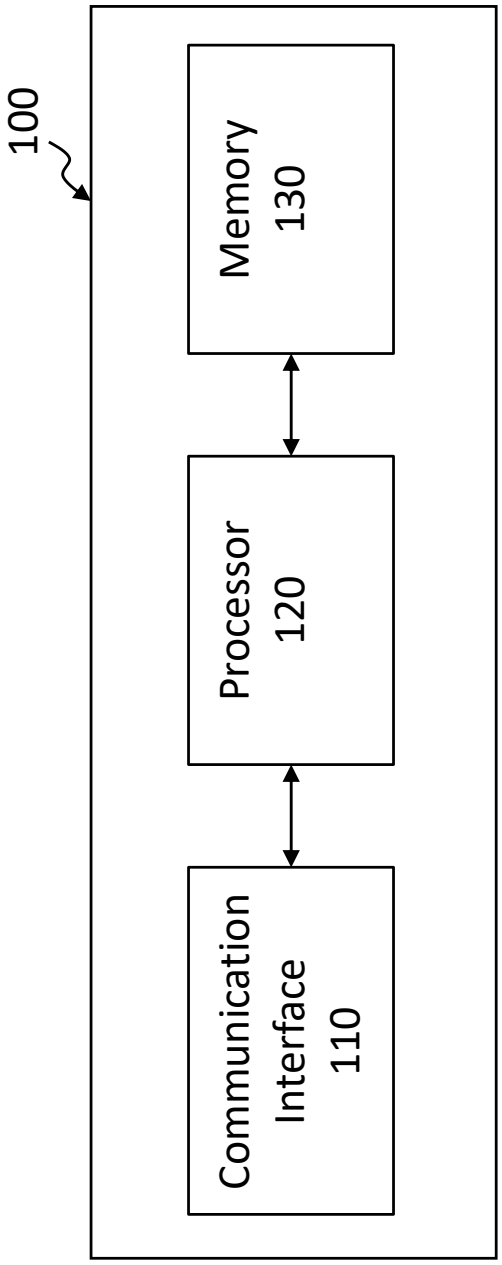


FIG. 3

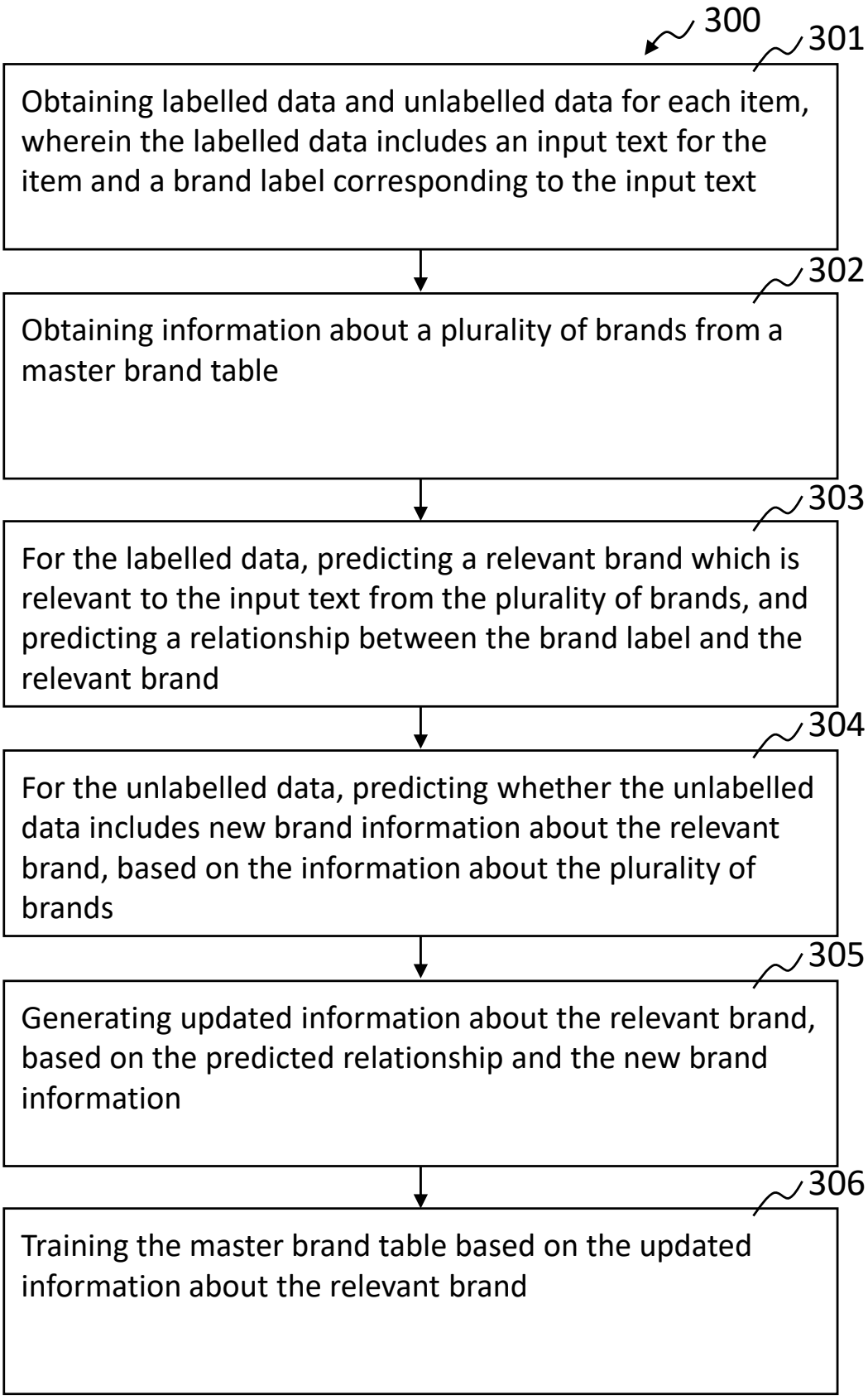

300
301
Obtaining labelled data and unlabelled data for each item, wherein the labelled data includes an input text for the item and a brand label corresponding to the input text
302
Obtaining information about a plurality of brands from a master brand table
303
For the labelled data, predicting a relevant brand which is relevant to the input text from the plurality of brands, and predicting a relationship between the brand label and the relevant brand
304
For the unlabelled data, predicting whether the unlabelled data includes new brand information about the relevant brand, based on the information about the plurality of brands
305
Generating updated information about the relevant brand, based on the predicted relationship and the new brand information
306
Training the master brand table based on the updated information about the relevant brand

FIG. 4

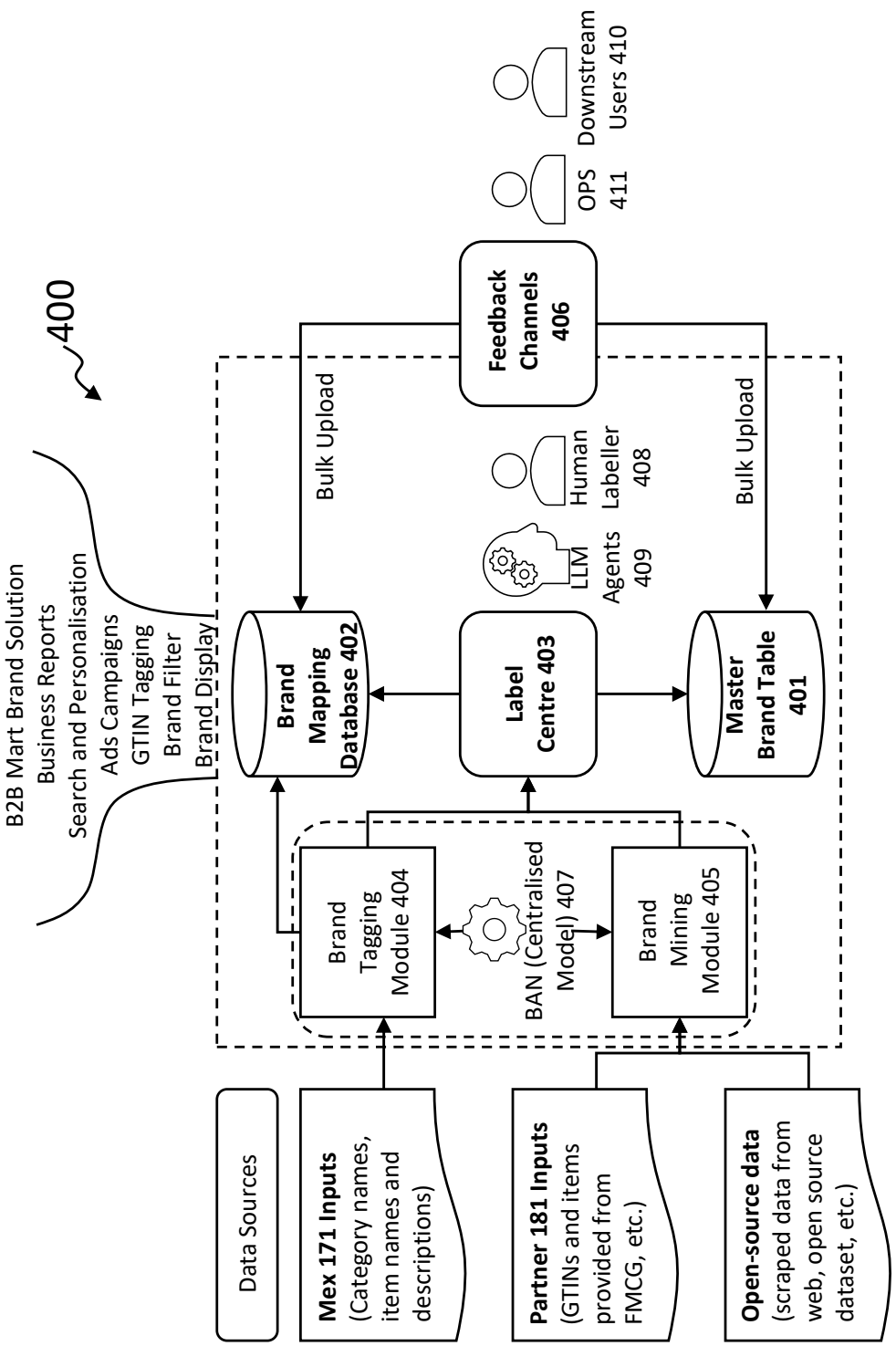

400
B2B Mart Brand Solution
Business Reports
Search and Personalisation
Ads Campaigns
GTIN Tagging
Brand Filter
Brand Display
Feedback Channels 406
OPS 411
Downstream Users 410
Bulk Upload
Bulk Upload
Human Labeller 408
LLM Agents 409
Brand Mapping Database 402
Label Centre 403
Master Brand Table 401
Brand Tagging Module 404
BAN (Centralised Model) 407
Brand Mining Module 405
Data Sources
Mex 171 Inputs (Category names, item names and descriptions)
Partner 181 Inputs (GTINs and items provided from FMCG, etc.)
Open-source data (scraped data from web, open source dataset, etc.)

FIG. 5

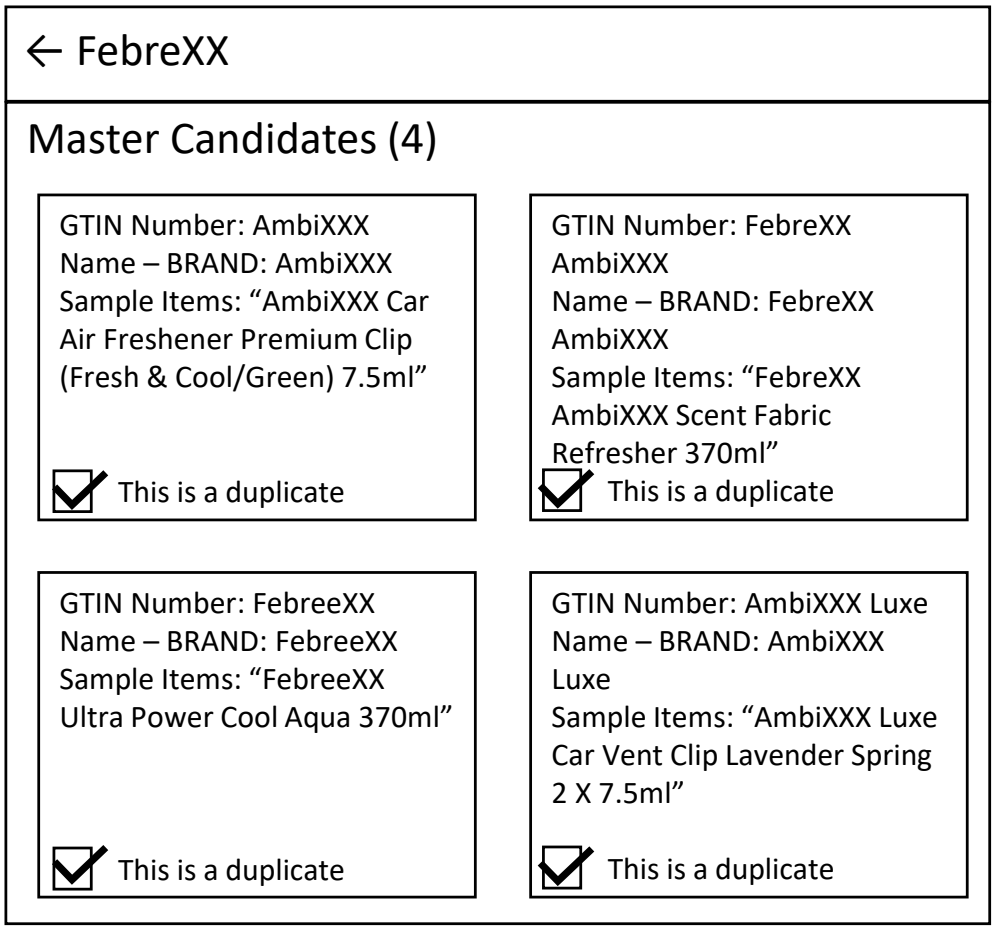
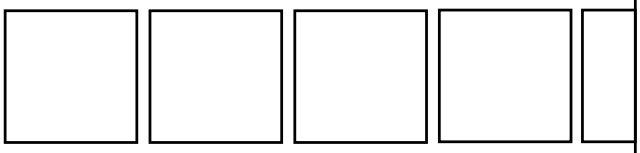

← FebreXX
Master Candidates (4)
GTIN Number: AmbiXXX
Name – BRAND: AmbiXXX
Sample Items: “AmbiXXX Car Air Freshener Premium Clip (Fresh & Cool/Green) 7.5ml”
This is a duplicate
GTIN Number: FebreXX AmbiXXX
Name – BRAND: FebreXX AmbiXXX
Sample Items: “FebreXX AmbiXXX Scent Fabric Refresher 370ml”
This is a duplicate
GTIN Number: FebreeXX
Name – BRAND: FebreeXX
Sample Items: “FebreeXX Ultra Power Cool Aqua 370ml”
This is a duplicate
GTIN Number: AmbiXXX Luxe
Name – BRAND: AmbiXXX Luxe
Sample Items: “AmbiXXX Luxe Car Vent Clip Lavender Spring 2 X 7.5ml”
This is a duplicate

FIG. 6

GTIN Number: FebreXX

Name (BRAND):
- ☑ FebreXX
- ☐ FebreXX AmbiXXX
- ☐ FebreeXX
- ☐ AmbiXXX
- ☐ AmbiXXX Luxe

Images 

Sample Items: AmbiXXX Car Air Freshener Premium Clip, …

Company Name: AAA

Normalised Name: FebreXX

Normalised Name in Local Language:

Parent Brand:

Logo URL:

Related Sub-brands:

Synonym List:

FIG. 7

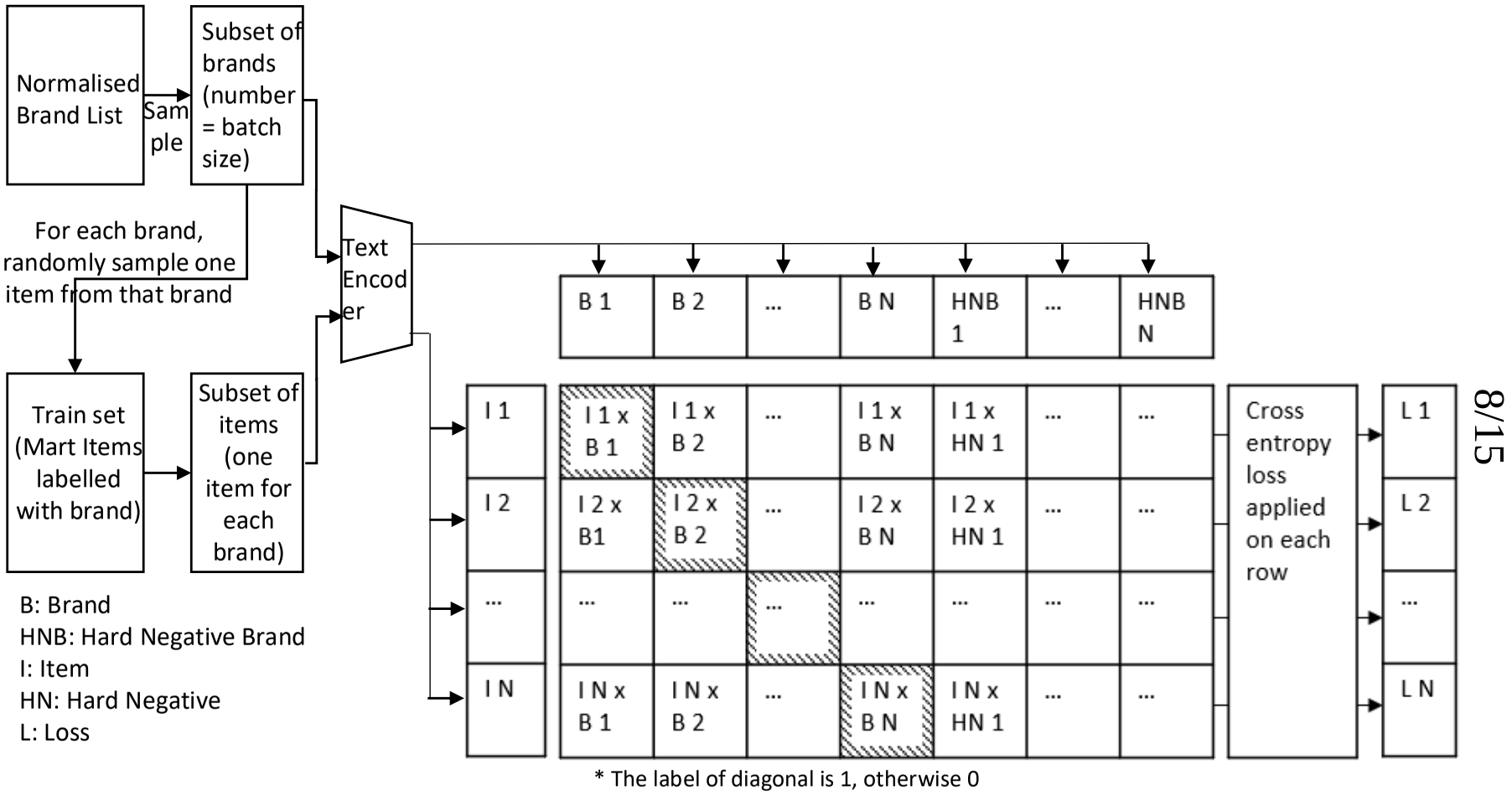
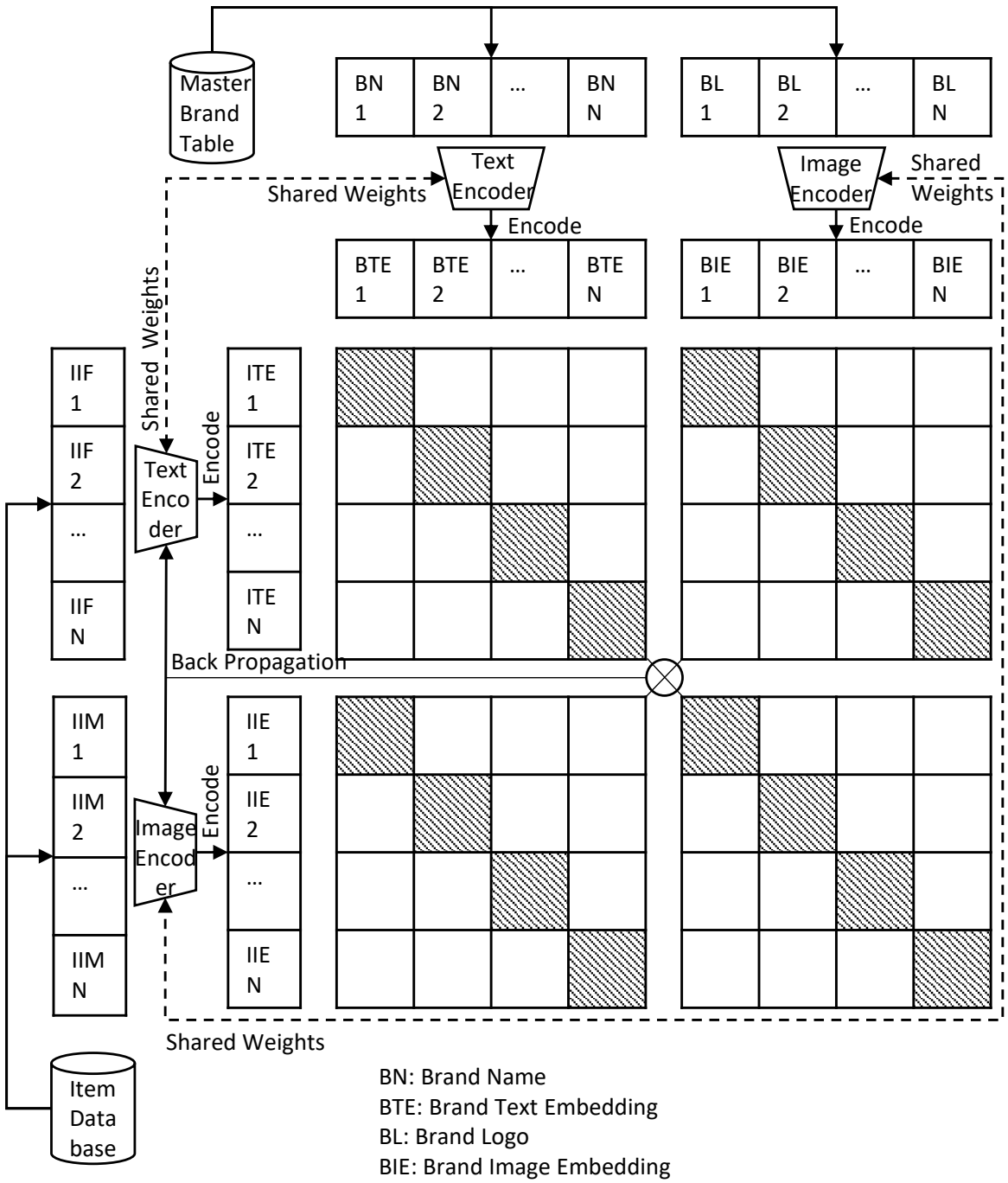

Normalised Brand List
Sam ple
Subset of brands (number = batch size)
For each brand, randomly sample one item from that brand
Train set (Mart Items labelled with brand)
Subset of items (one item for each brand)
Text Encod er
B: Brand
HNB: Hard Negative Brand
I: Item
HN: Hard Negative
L: Loss
B 1
B 2
...
B N
HNB 1
...
HNB N
I 1
I 2
...
I N
I 1 x B 1
I 1 x B 2
I 1 x B N
I 1 x HN 1
I 2 x B1
I 2 x B 2
I 2 x B N
I 2 x HN 1
I N x B 1
I N x B 2
I N x B N
I N x HN 1
Cross entropy loss applied on each row
L 1
L 2
L N
* The label of diagonal is 1, otherwise 0

FIG. 8



BN: Brand Name
BTE: Brand Text Embedding
BL: Brand Logo
BIE: Brand Image Embedding
IIF: Item Information
ITE: Item Text Embedding
IIM: Item Image
IIE: Item Image Embedding

FIG. 9A

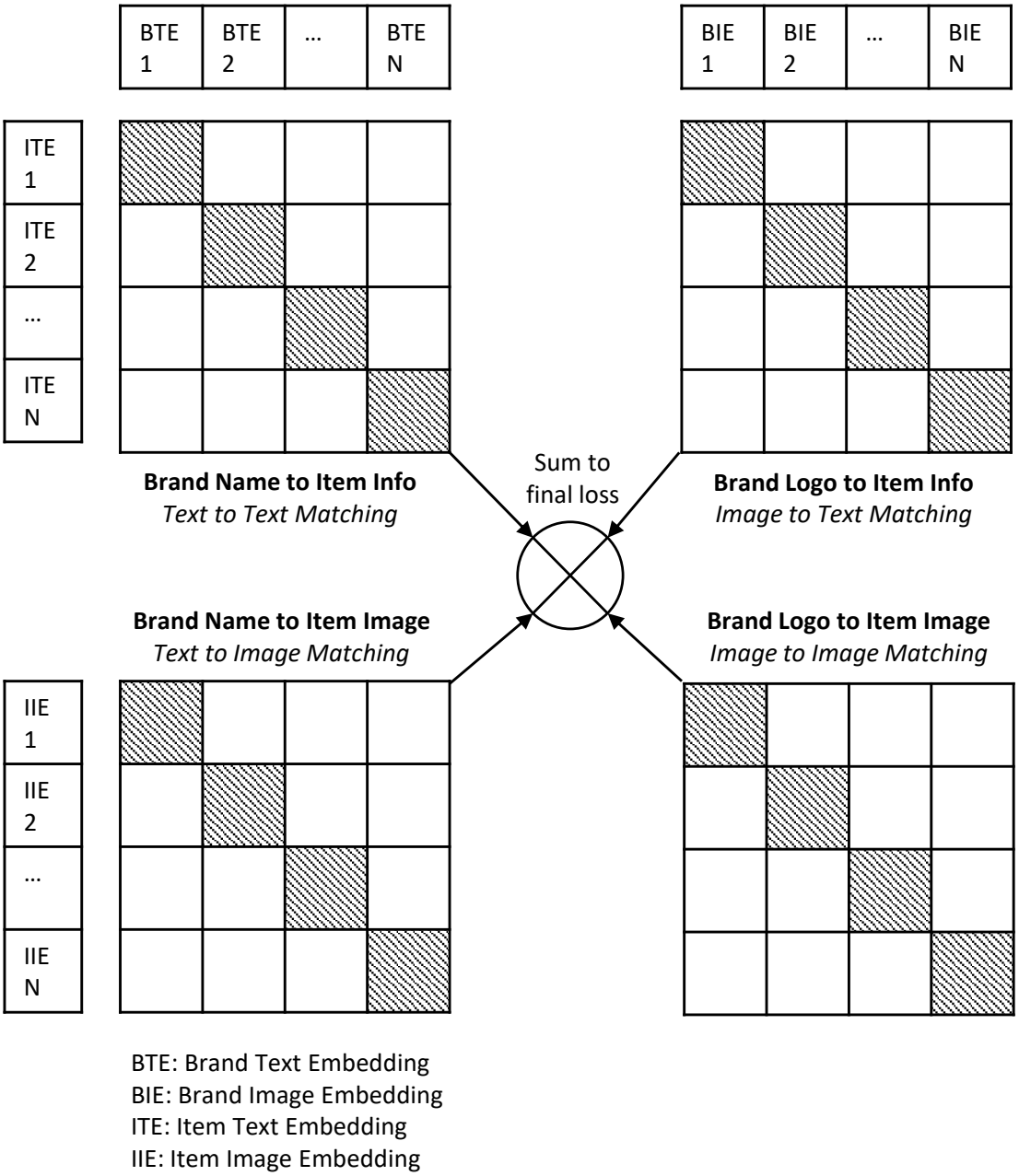

BTE 1
BTE 2
…
BTE N
BIE 1
BIE 2
…
BIE N
ITE 1
ITE 2
…
ITE N
Brand Name to Item Info
Text to Text Matching
Sum to final loss
Brand Logo to Item Info
Image to Text Matching
Brand Name to Item Image
Text to Image Matching
Brand Logo to Item Image
Image to Image Matching
IIE 1
IIE 2
…
IIE N
BTE: Brand Text Embedding
BIE: Brand Image Embedding
ITE: Item Text Embedding
IIE: Item Image Embedding

FIG. 9B

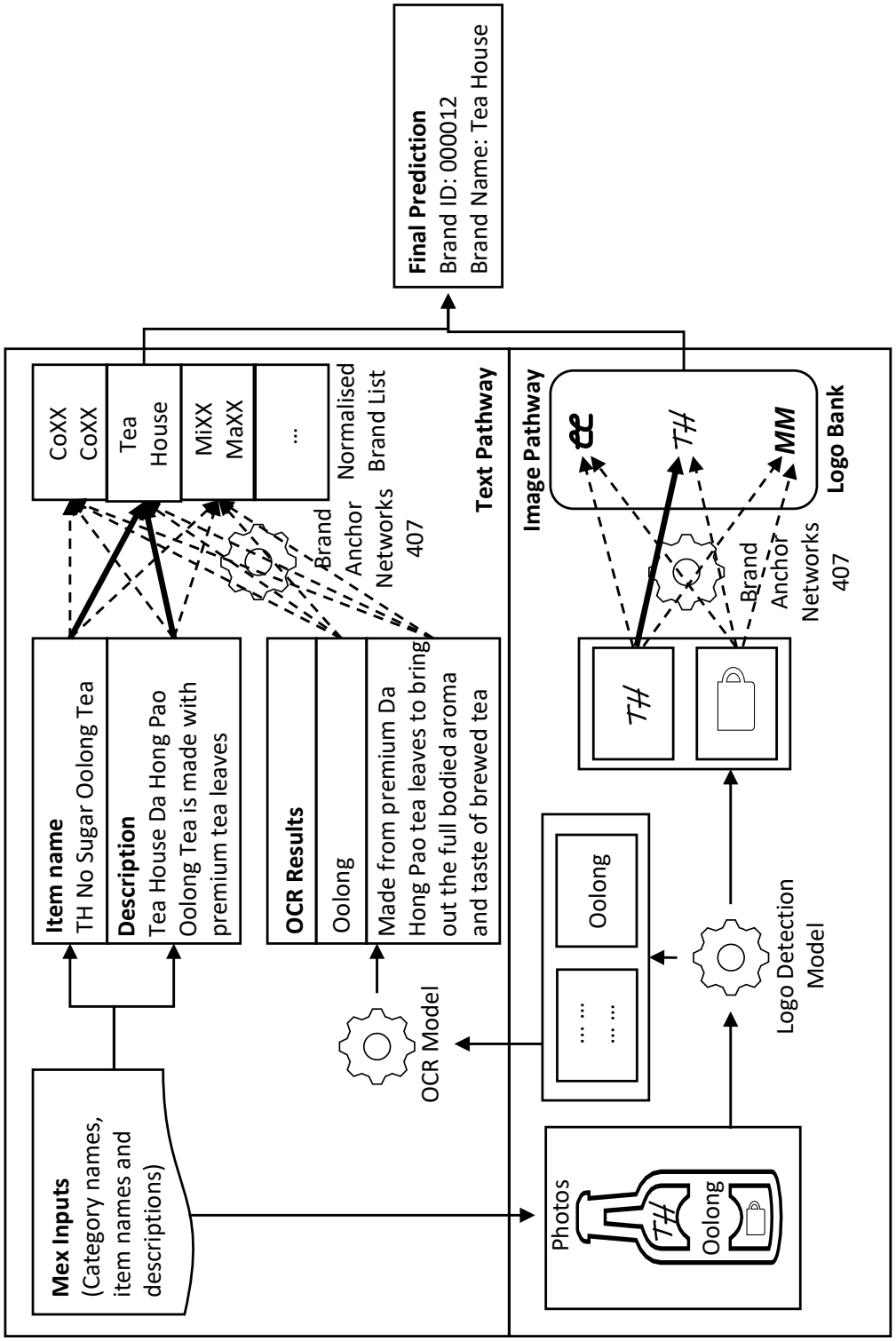

Final Prediction
Brand ID: 000012
Brand Name: Tea House
Mex Inputs
(Category names, item names and descriptions)
Item name
TH No Sugar Oolong Tea
Description
Tea House Da Hong Pao Oolong Tea is made with premium tea leaves
OCR Results
Oolong
Made from premium Da Hong Pao tea leaves to bring out the full bodied aroma and taste of brewed tea
OCR Model
CoXX CoXX
Tea House
MiXX MaXX
...
Normalised Brand List
Brand Anchor Networks 407
Text Pathway
Image Pathway
Logo Bank
Brand Anchor Networks 407
Logo Detection Model
Oolong
Photos
Oolong

FIG. 10

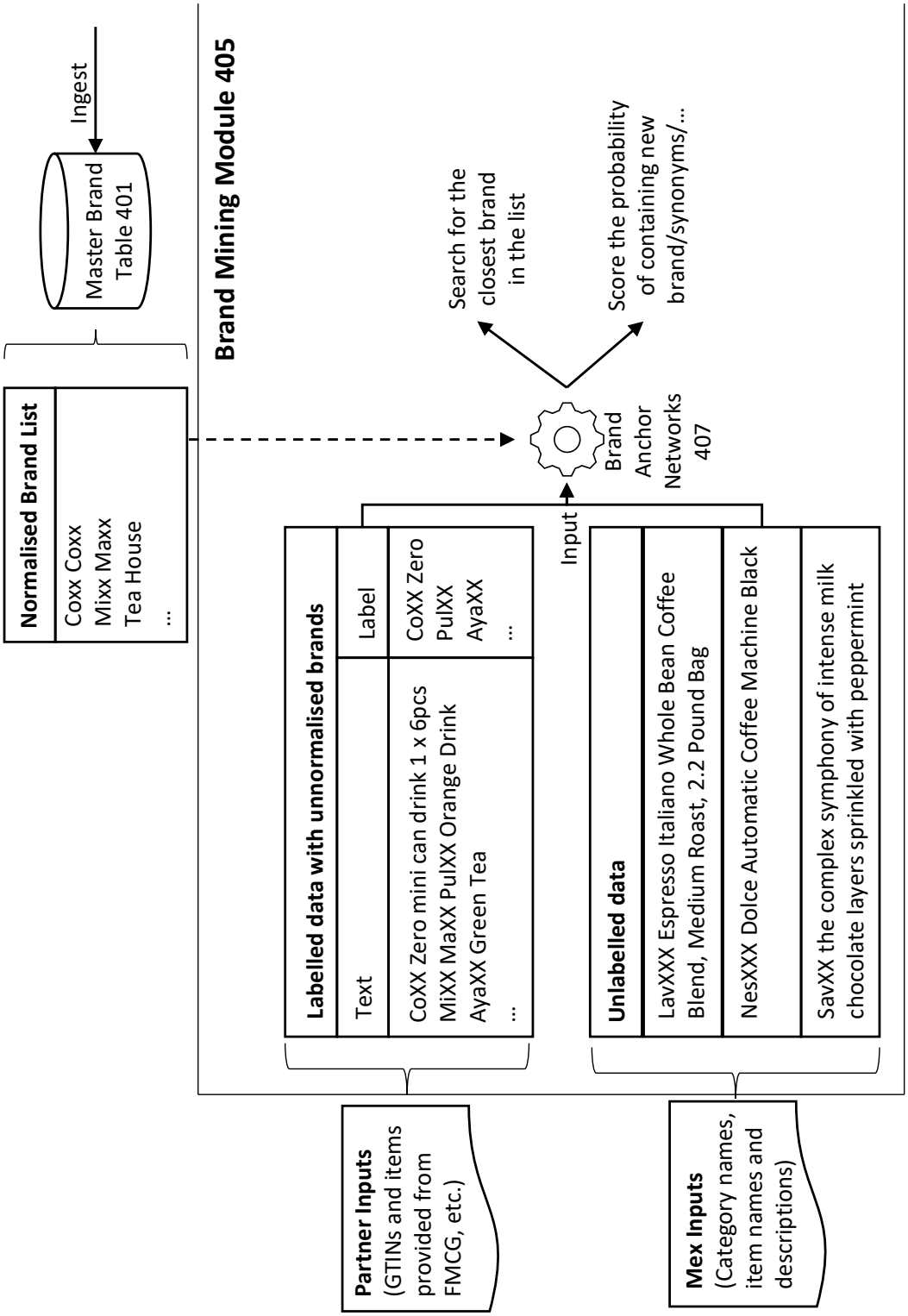

Ingest
Master Brand Table 401
Brand Mining Module 405
Normalised Brand List
Coxx Coxx
Mixx Maxx
Tea House
...
Search for the closest brand in the list
Score the probability of containing new brand/synonyms/...
Brand Anchor Networks 407
Input
Labelled data with unnormalised brands
Text
Label
CoXX Zero mini can drink 1 x 6pcs
MiXX MaXX PulXX Orange Drink
AyaXX Green Tea
...
CoXX Zero
PulXX
AyaXX
...
Unlabelled data
LavXXX Espresso Italiano Whole Bean Coffee Blend, Medium Roast, 2.2 Pound Bag
NesXXX Dolce Automatic Coffee Machine Black
SavXX the complex symphony of intense milk chocolate layers sprinkled with peppermint
Partner Inputs (GTINs and items provided from FMCG, etc.)
Mex Inputs (Category names, item names and descriptions)

FIG. 11A

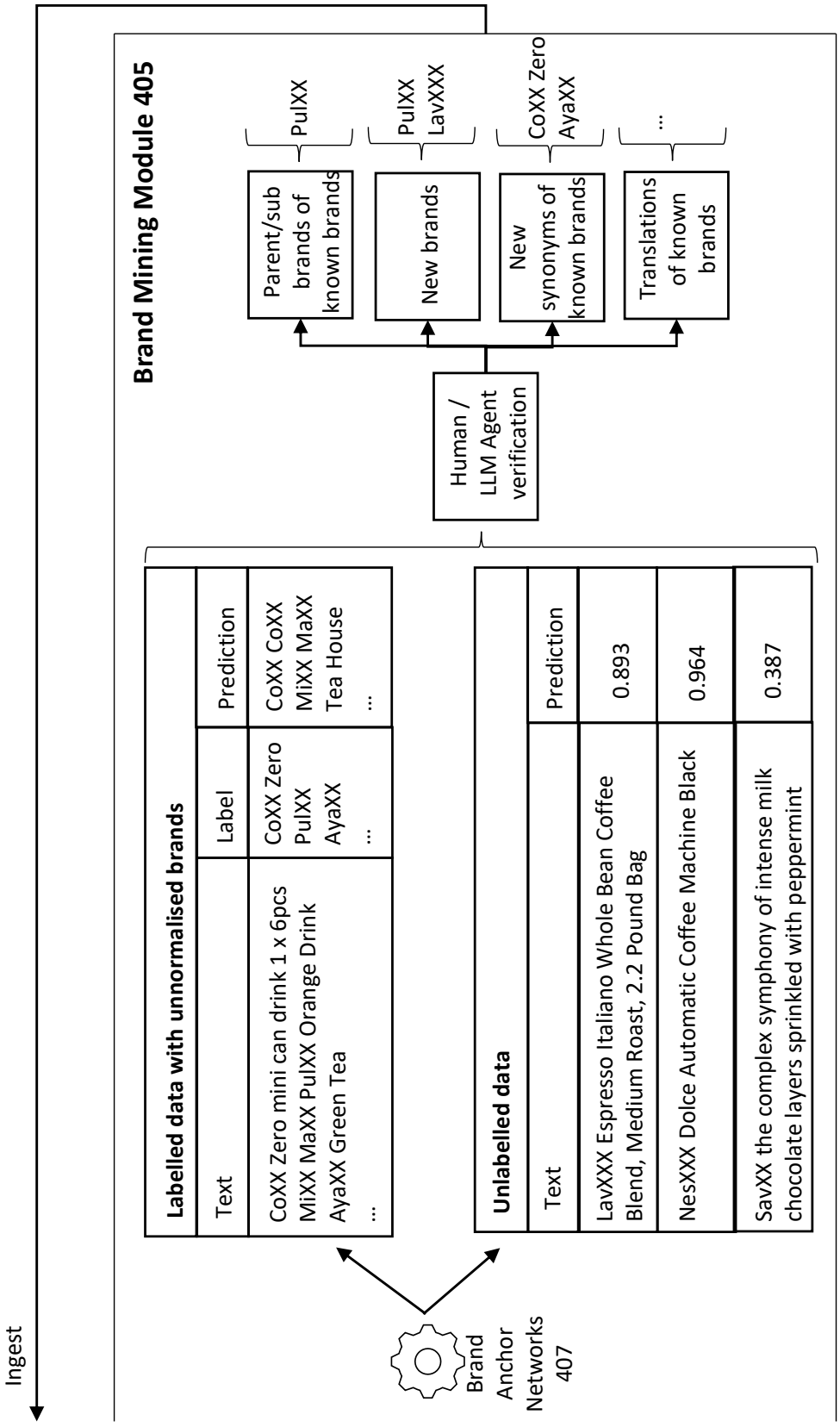

Ingest
Brand Mining Module 405
Brand Anchor Networks 407
Labelled data with unnormalised brands
Text
Label
Prediction
CoXX Zero mini can drink 1 x 6pcs MiXX MaXX PulXX Orange Drink AyaXX Green Tea
...
CoXX Zero
PulXX
AyaXX
...
CoXX CoXX MiXX MaXX Tea House
...
Unlabelled data
Text
Prediction
LavXXX Espresso Italiano Whole Bean Coffee Blend, Medium Roast, 2.2 Pound Bag
0.893
NesXXX Dolce Automatic Coffee Machine Black
0.964
SavXX the complex symphony of intense milk chocolate layers sprinkled with peppermint
0.387
Human / LLM Agent verification
Parent/sub brands of known brands
New brands
New synonyms of known brands
Translations of known brands
PulXX
PulXX LavXXX
CoXX Zero AyaXX
...

FIG. 11B

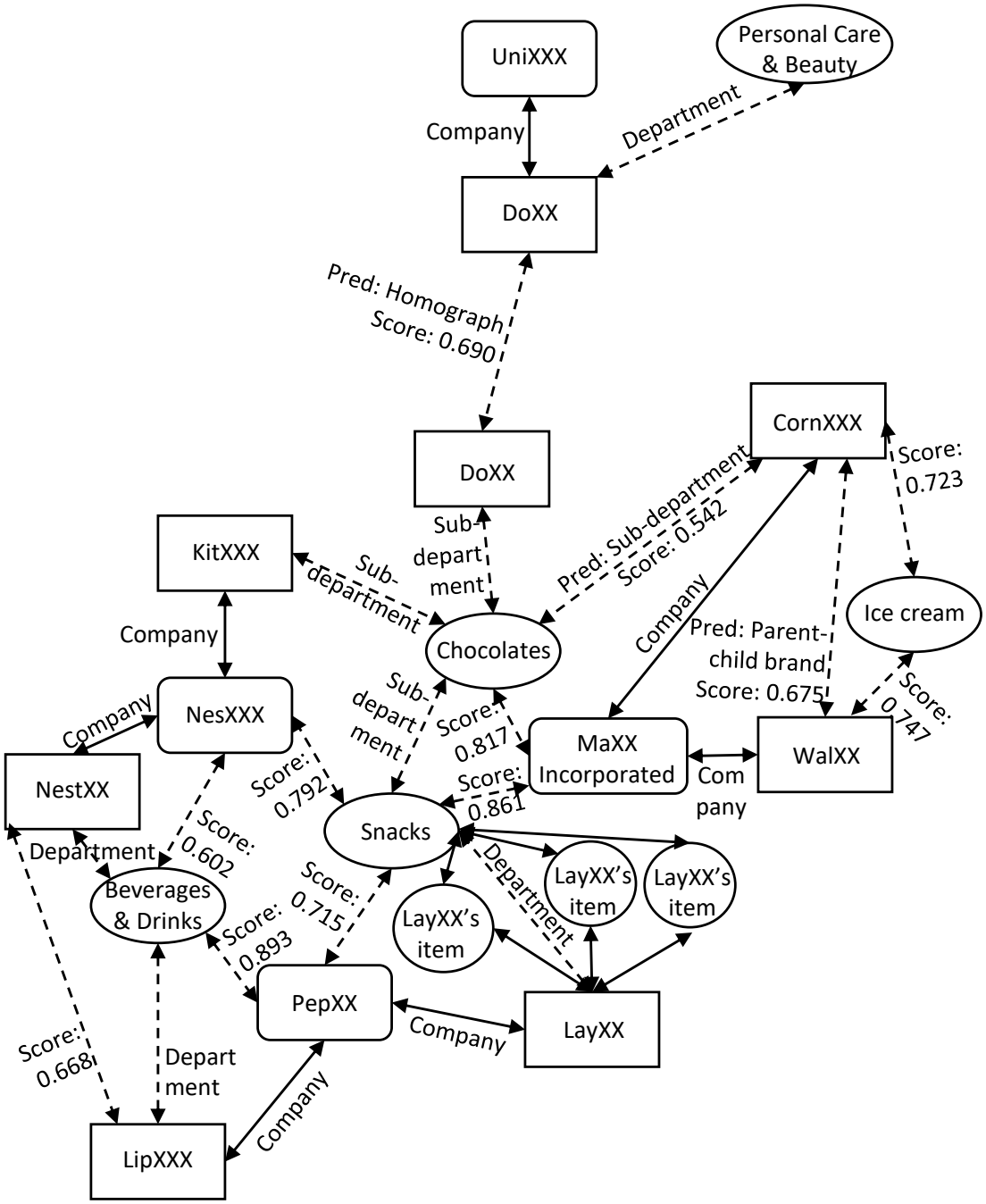

UniXXX
Personal Care & Beauty
Company
Department
DoXX
Pred: Homograph
Score: 0.690
DoXX
CornXXX
Score: 0.723
Pred: Sub-department
Score: 0.542
Sub-department
KitXXX
Sub-department
Company
Chocolates
Company
Pred: Parent-child brand
Score: 0.675
Ice cream
Score: 0.747
Company
NesXXX
Company
Sub-department
Score: 0.817
MaXX Incorporated
WalXX
Company
NestXX
Score: 0.792
Score: 0.861
Snacks
Department
Score: 0.602
Beverages & Drinks
Score: 0.715
Score: 0.893
LayXX's item
LayXX's item
LayXX's item
Department
PepXX
Company
LayXX
Score: 0.668
Department
Company
LipXXX

FIG. 12

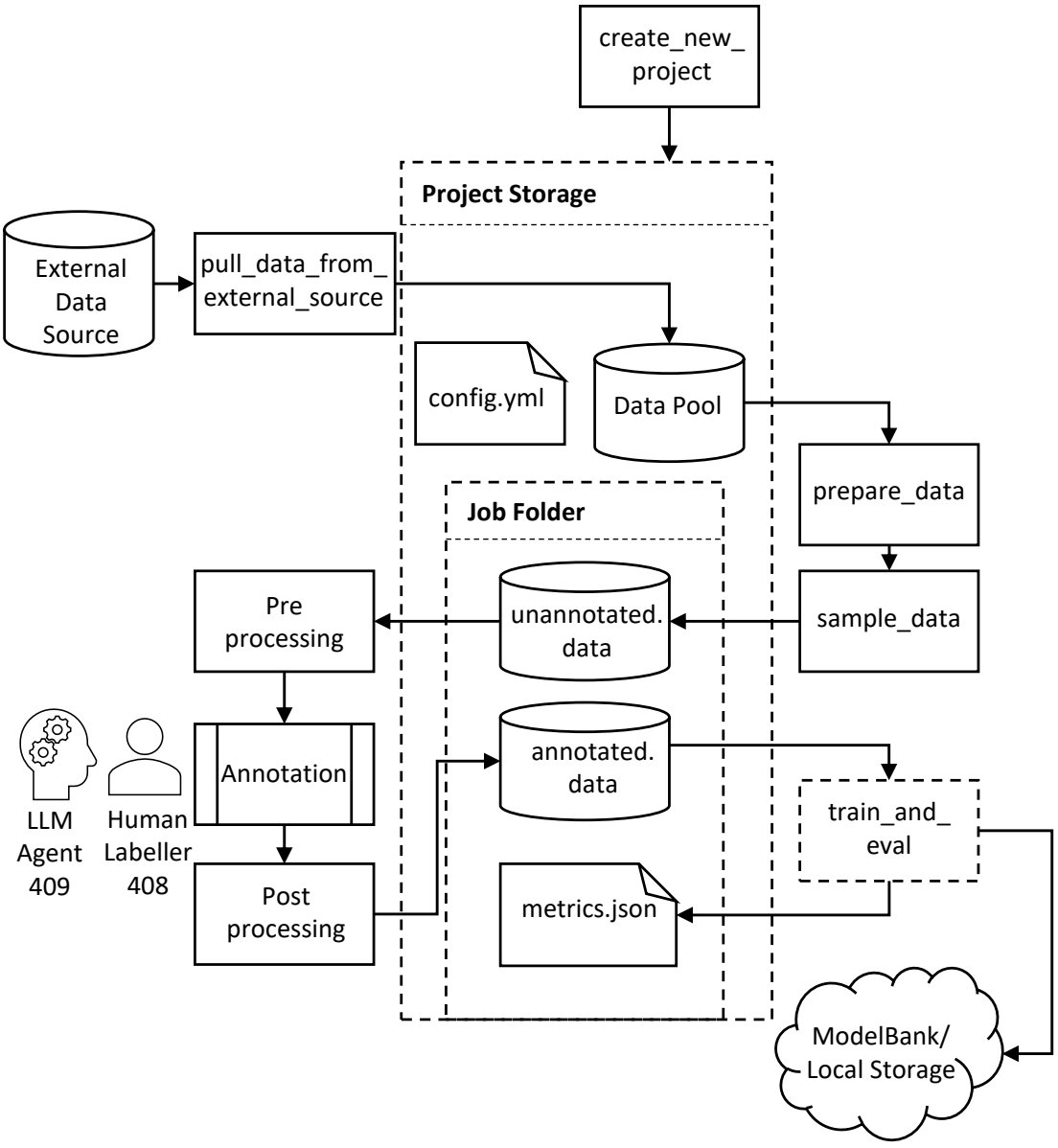

create_new_
project
Project Storage
External
Data
Source
pull_data_from_
external_source
config.yml
Data Pool
prepare_data
Job Folder
Pre
processing
unannotated.
data
sample_data
Annotation
annotated.
data
train_and_
eval
LLM
Agent
409
Human
Labeller
408
Post
processing
metrics.json
ModelBank/
Local Storage

FIG. 13