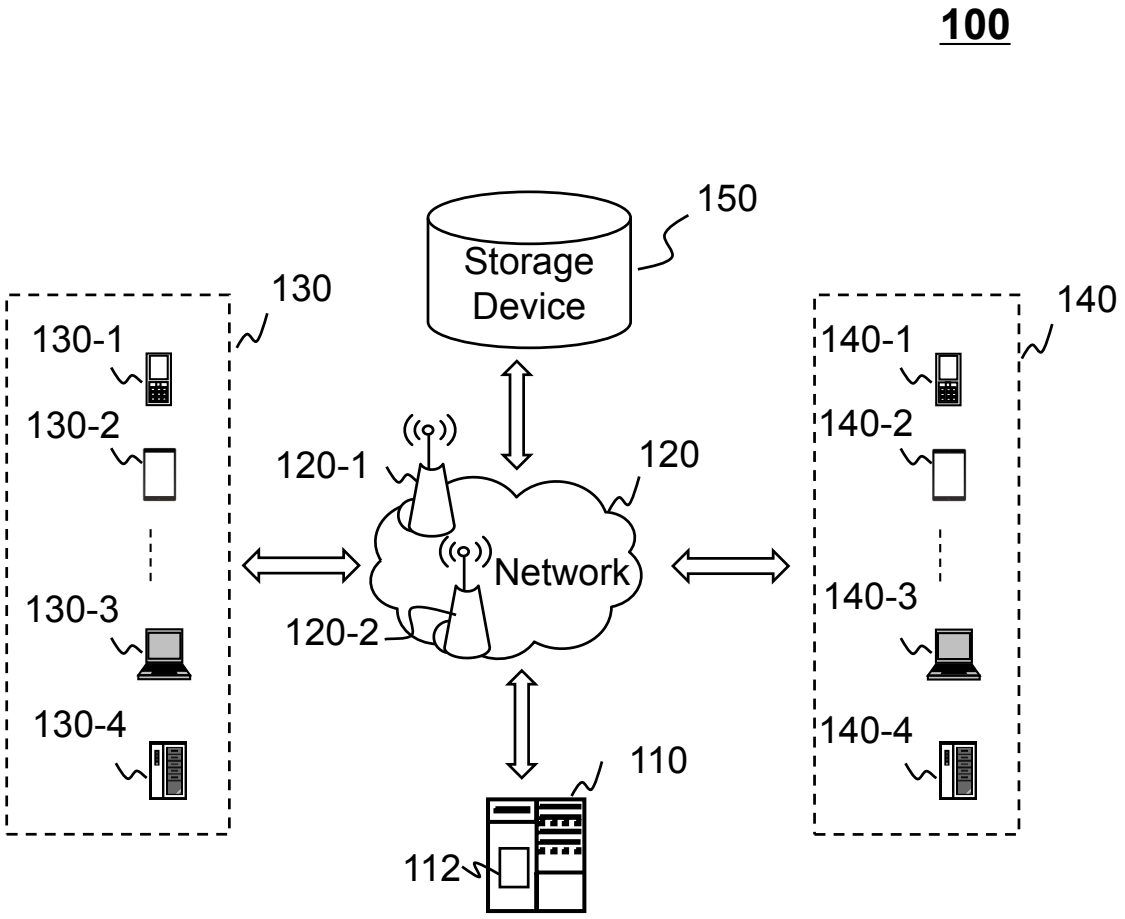

100
150
Storage Device
130
130-1
130-2
130-3
130-4
120-1
120
Network
120-2
110
112
140
140-1
140-2
140-3
140-4

FIG. 1

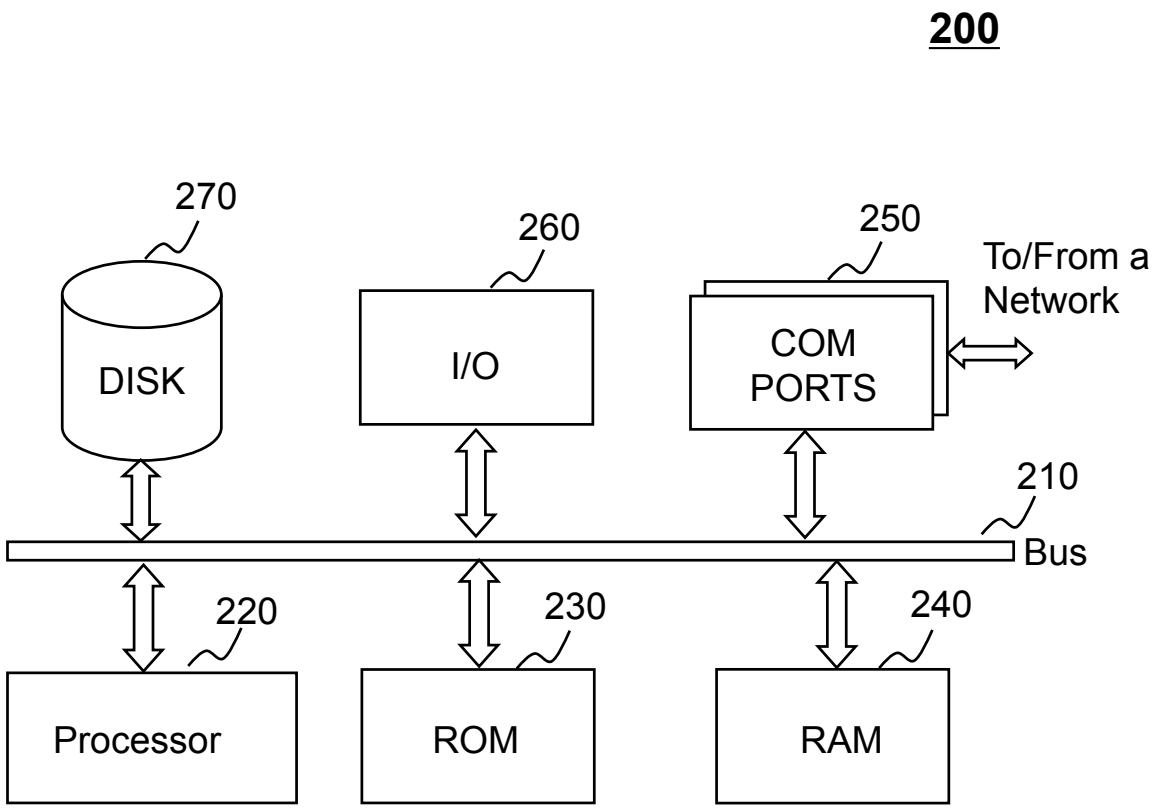

200
270
260
250
To/From a
Network
DISK
I/O
COM
PORTS
210
Bus
220
230
240
Processor
ROM
RAM

FIG. 2

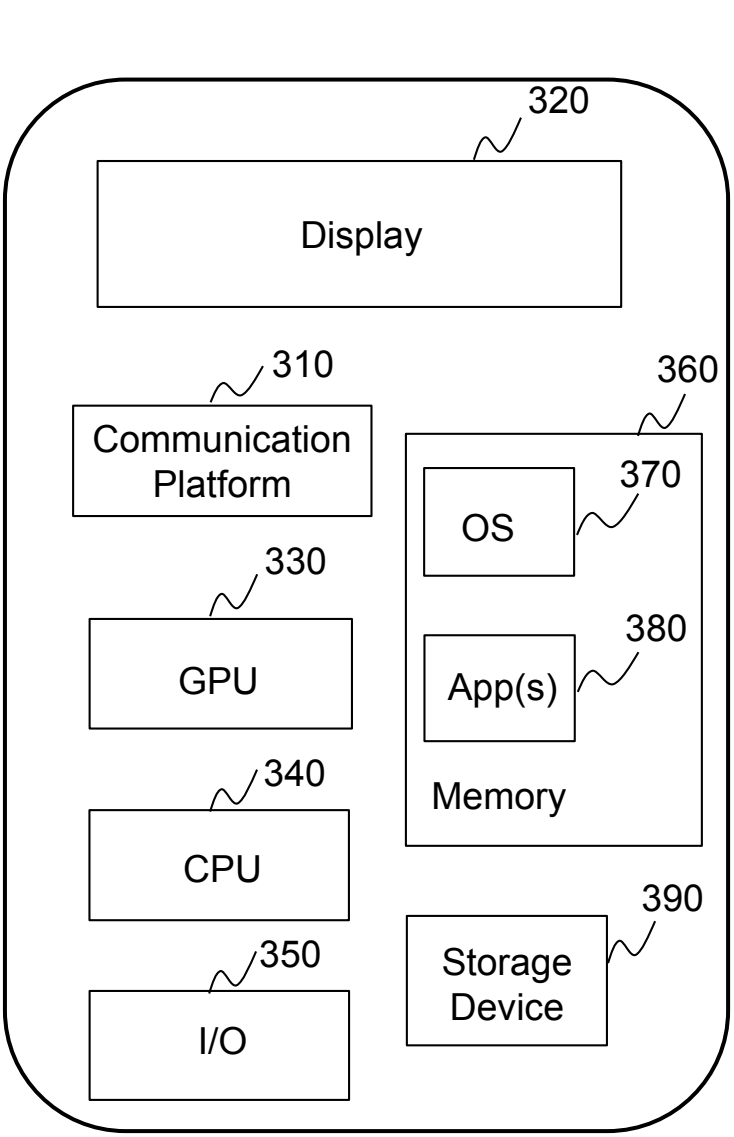

300
320
Display
310
Communication Platform
360
370
OS
330
GPU
380
App(s)
Memory
340
CPU
390
Storage Device
350
I/O

FIG. 3

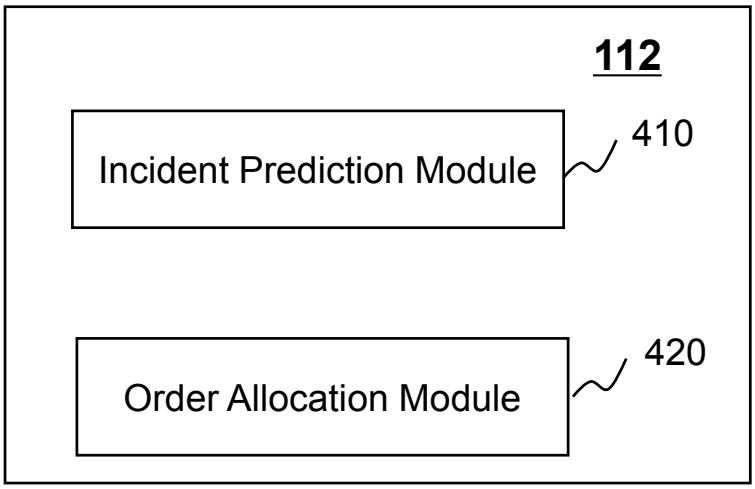

112
Incident Prediction Module
410
Order Allocation Module
420

FIG. 4A

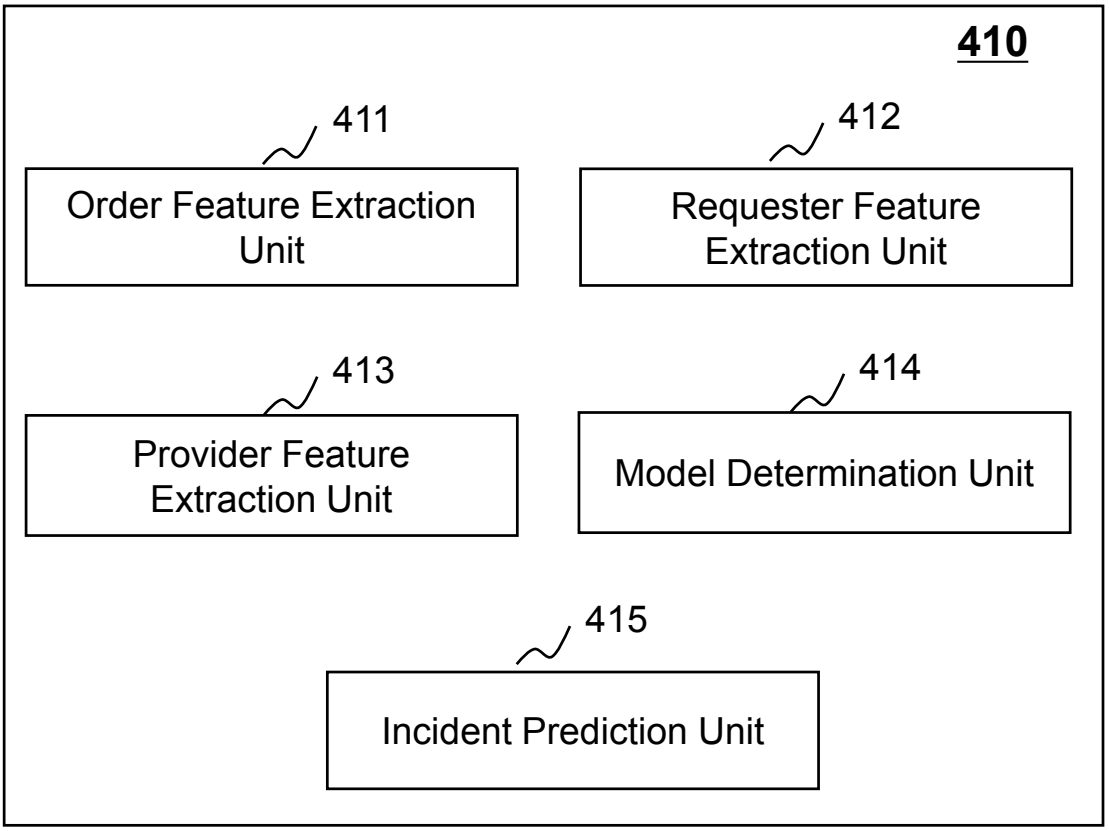

410
411
Order Feature Extraction Unit
412
Requester Feature Extraction Unit
413
Provider Feature Extraction Unit
414
Model Determination Unit
415
Incident Prediction Unit

FIG. 4B

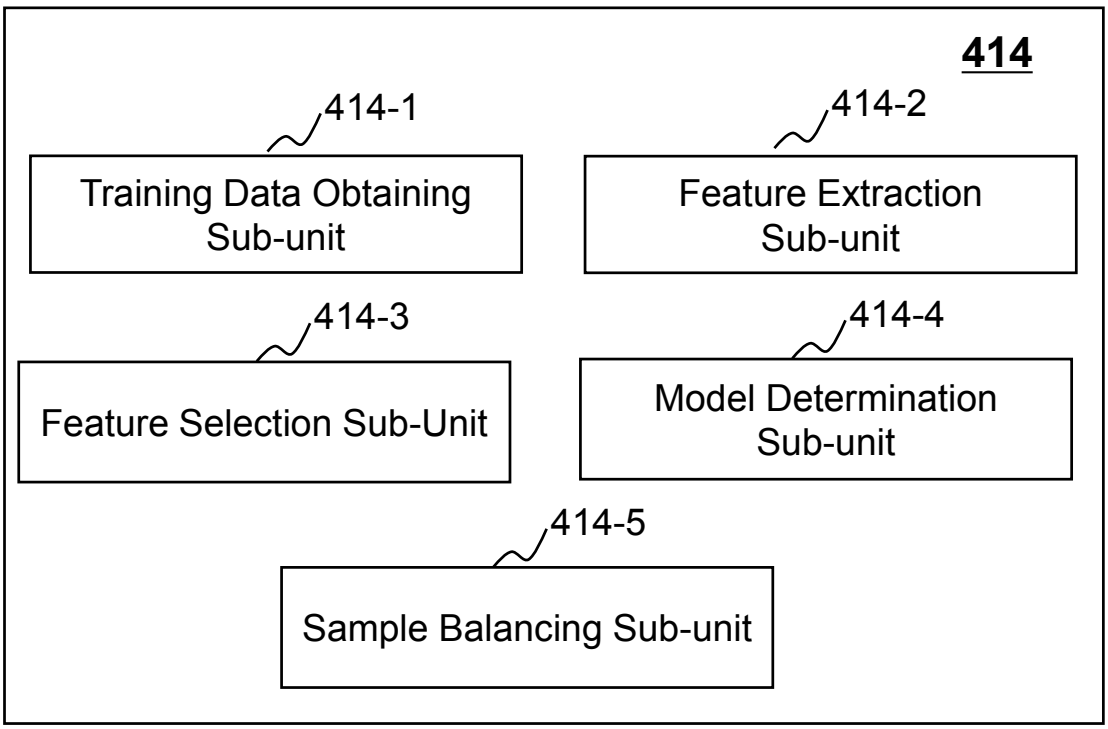

414
414-1
Training Data Obtaining Sub-unit
414-2
Feature Extraction Sub-unit
414-3
Feature Selection Sub-Unit
414-4
Model Determination Sub-unit
414-5
Sample Balancing Sub-unit

FIG. 4C

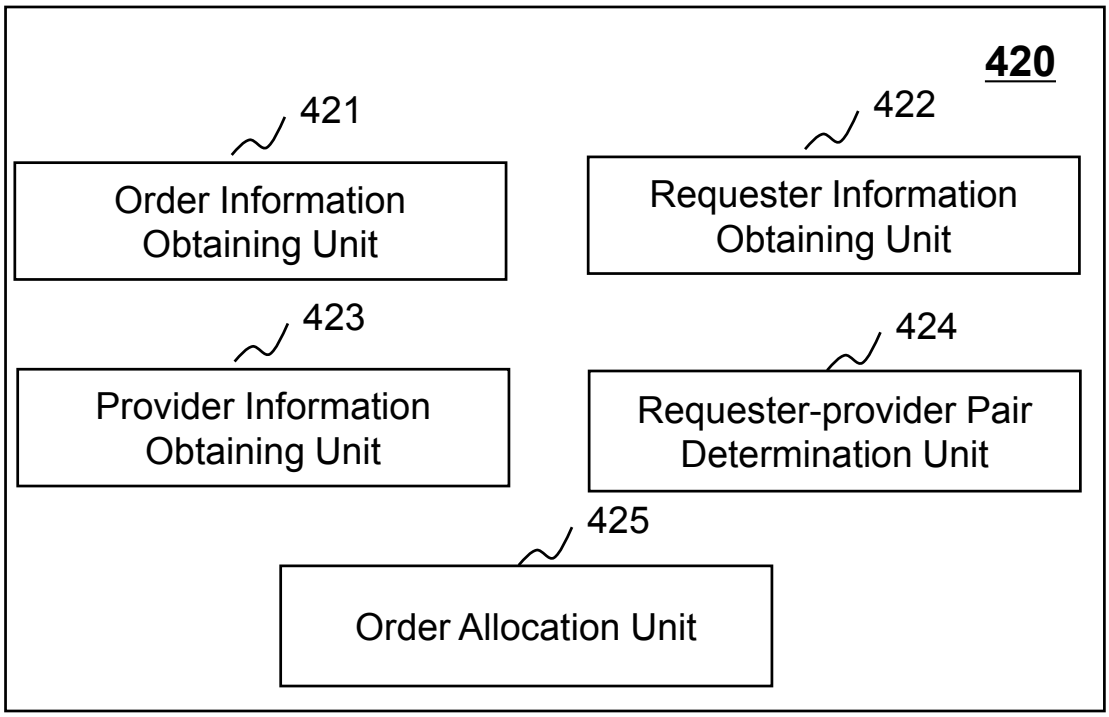

420
421
Order Information Obtaining Unit
422
Requester Information Obtaining Unit
423
Provider Information Obtaining Unit
424
Requester-provider Pair Determination Unit
425
Order Allocation Unit

FIG. 4D

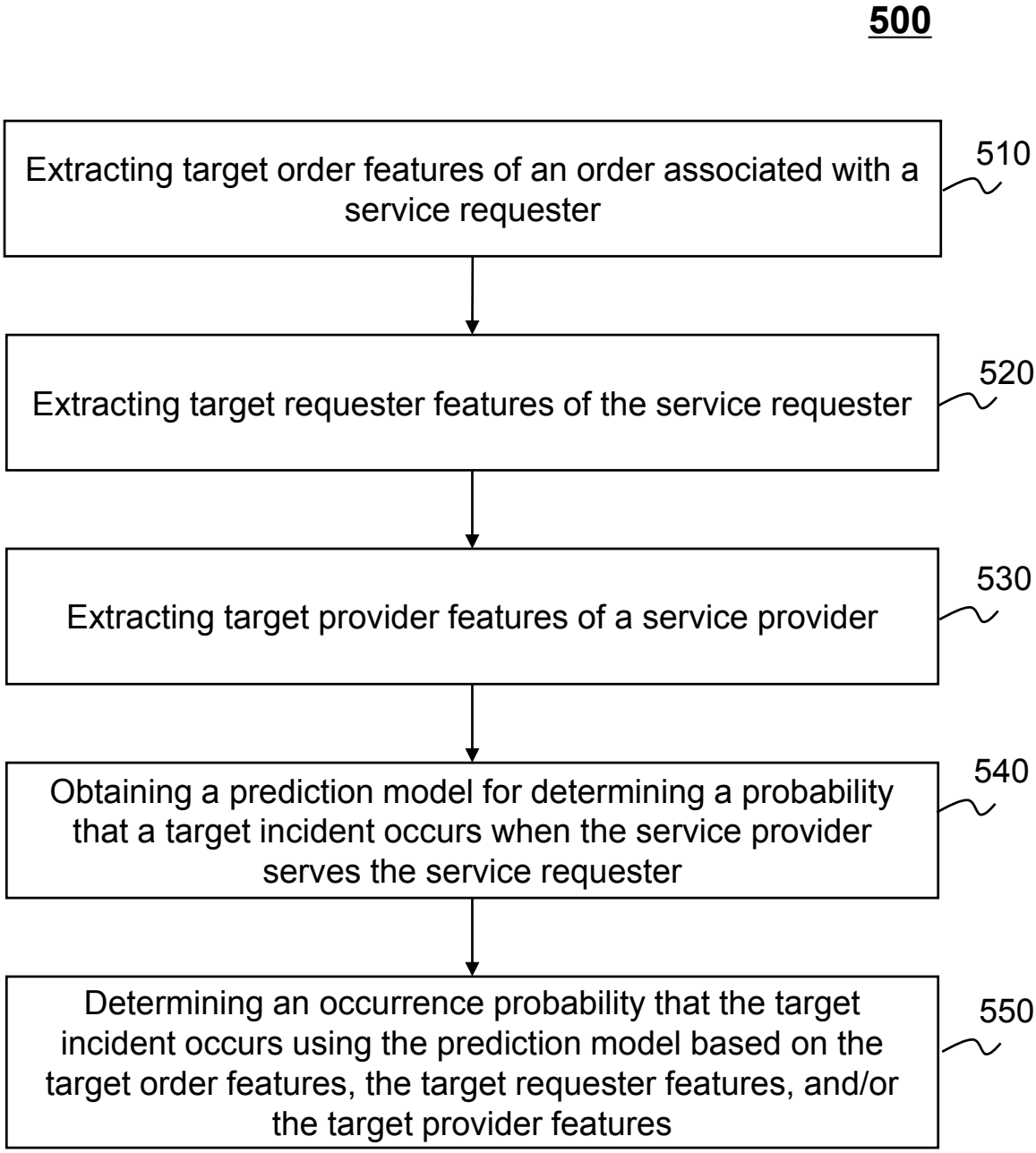

500
Extracting target order features of an order associated with a service requester
510
Extracting target requester features of the service requester
520
Extracting target provider features of a service provider
530
Obtaining a prediction model for determining a probability that a target incident occurs when the service provider serves the service requester
540
Determining an occurrence probability that the target incident occurs using the prediction model based on the target order features, the target requester features, and/or the target provider features
550

FIG. 5

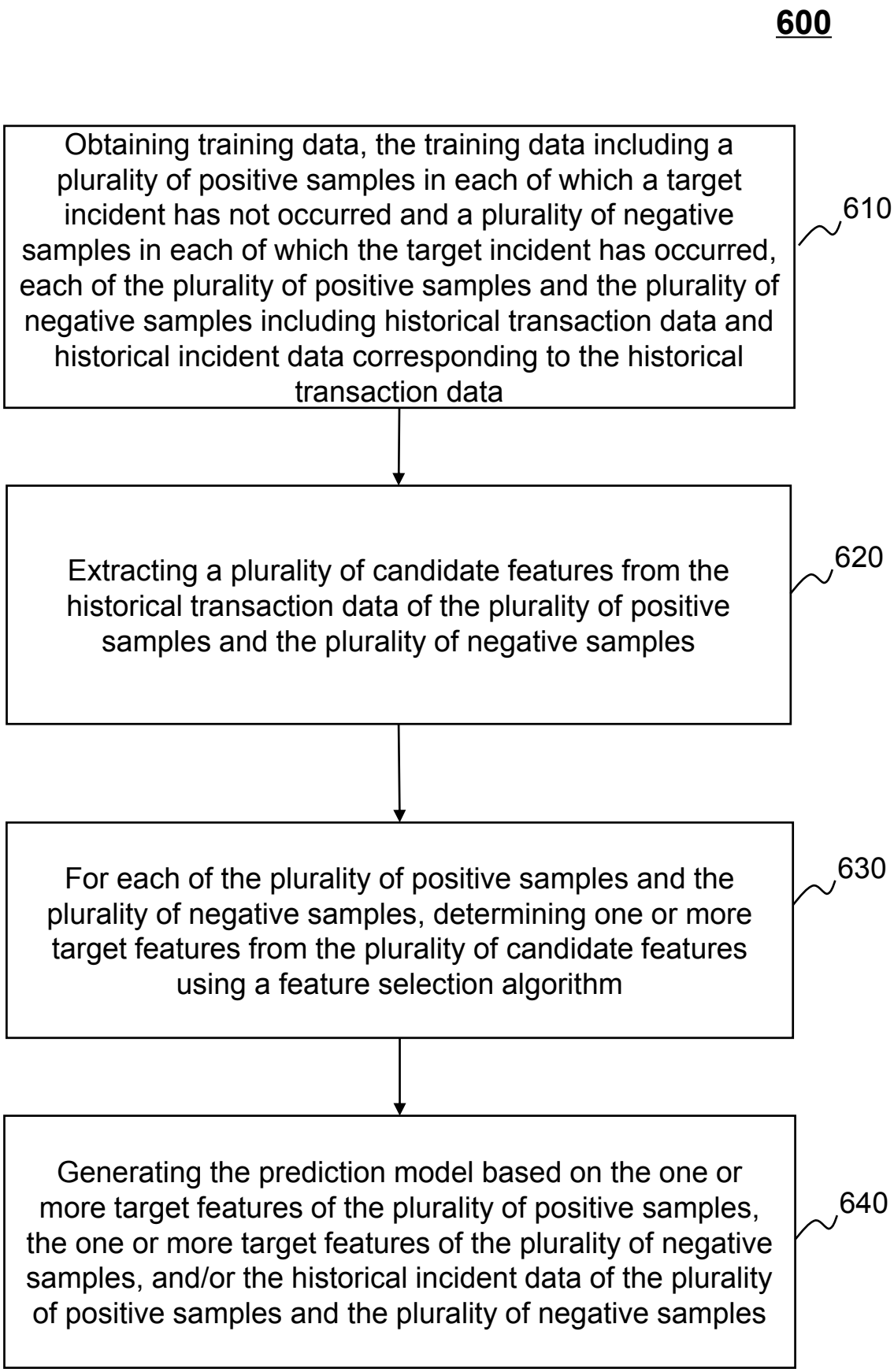

600
Obtaining training data, the training data including a plurality of positive samples in each of which a target incident has not occurred and a plurality of negative samples in each of which the target incident has occurred, each of the plurality of positive samples and the plurality of negative samples including historical transaction data and historical incident data corresponding to the historical transaction data
610
Extracting a plurality of candidate features from the historical transaction data of the plurality of positive samples and the plurality of negative samples
620
For each of the plurality of positive samples and the plurality of negative samples, determining one or more target features from the plurality of candidate features using a feature selection algorithm
630
Generating the prediction model based on the one or more target features of the plurality of positive samples, the one or more target features of the plurality of negative samples, and/or the historical incident data of the plurality of positive samples and the plurality of negative samples
640

FIG. 6

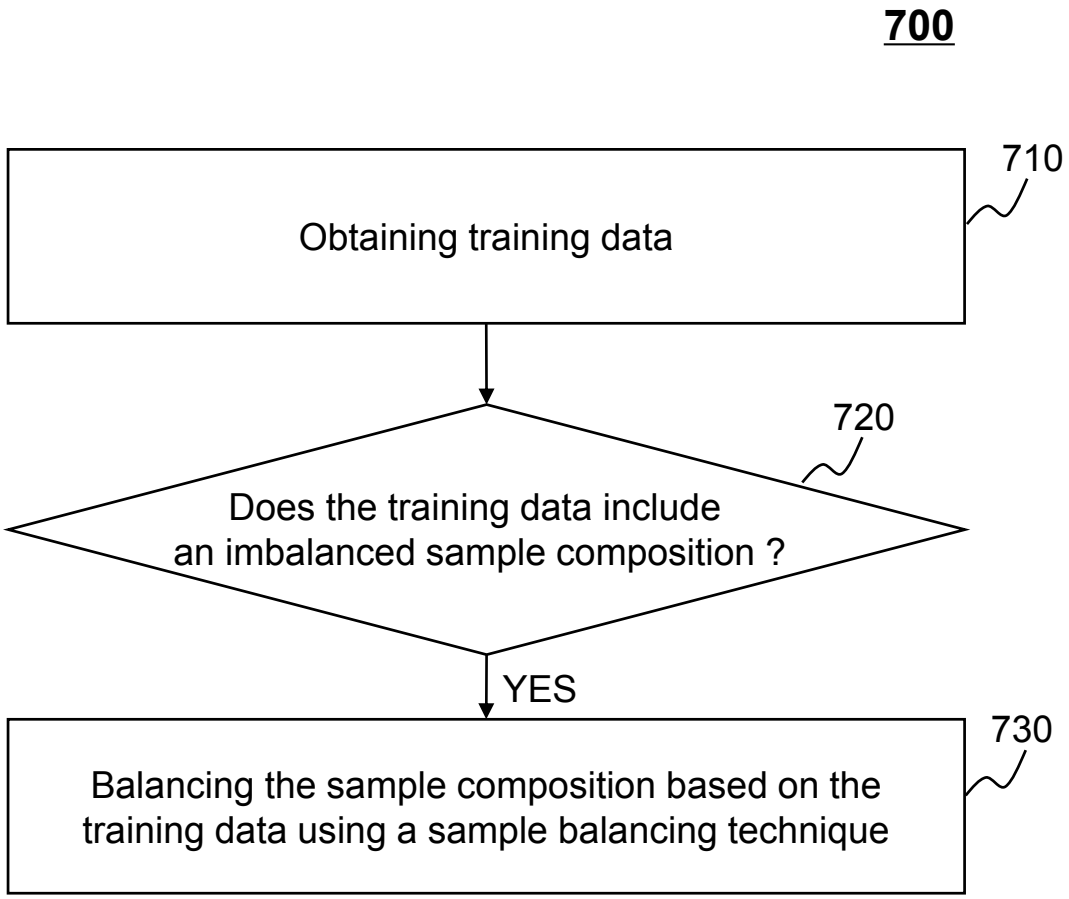

700
710
Obtaining training data
720
Does the training data include
an imbalanced sample composition ?
YES
730
Balancing the sample composition based on the
training data using a sample balancing technique

FIG. 7

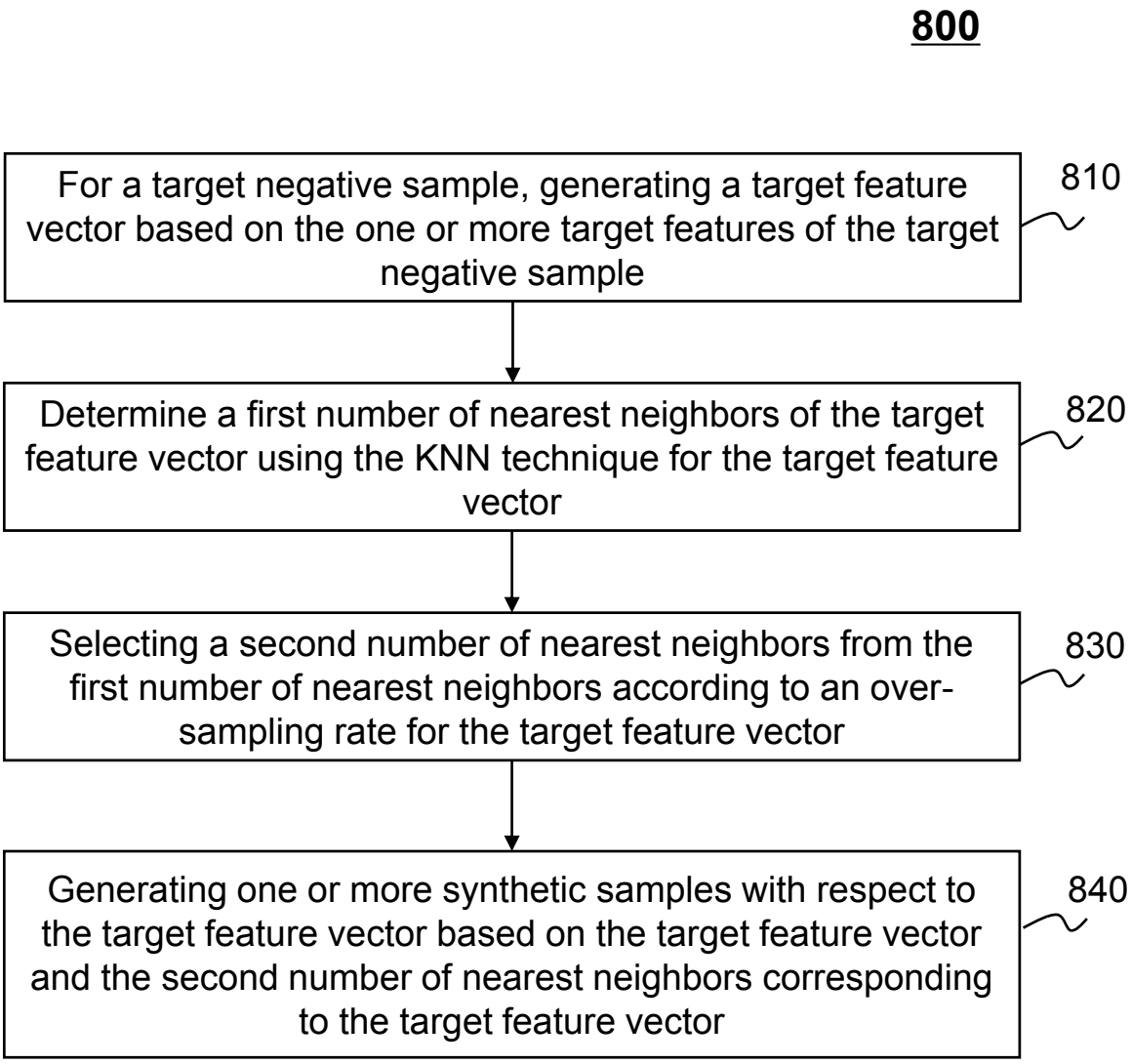

800
For a target negative sample, generating a target feature vector based on the one or more target features of the target negative sample
810
Determine a first number of nearest neighbors of the target feature vector using the KNN technique for the target feature vector
820
Selecting a second number of nearest neighbors from the first number of nearest neighbors according to an over-sampling rate for the target feature vector
830
Generating one or more synthetic samples with respect to the target feature vector based on the target feature vector and the second number of nearest neighbors corresponding to the target feature vector
840

FIG. 8A

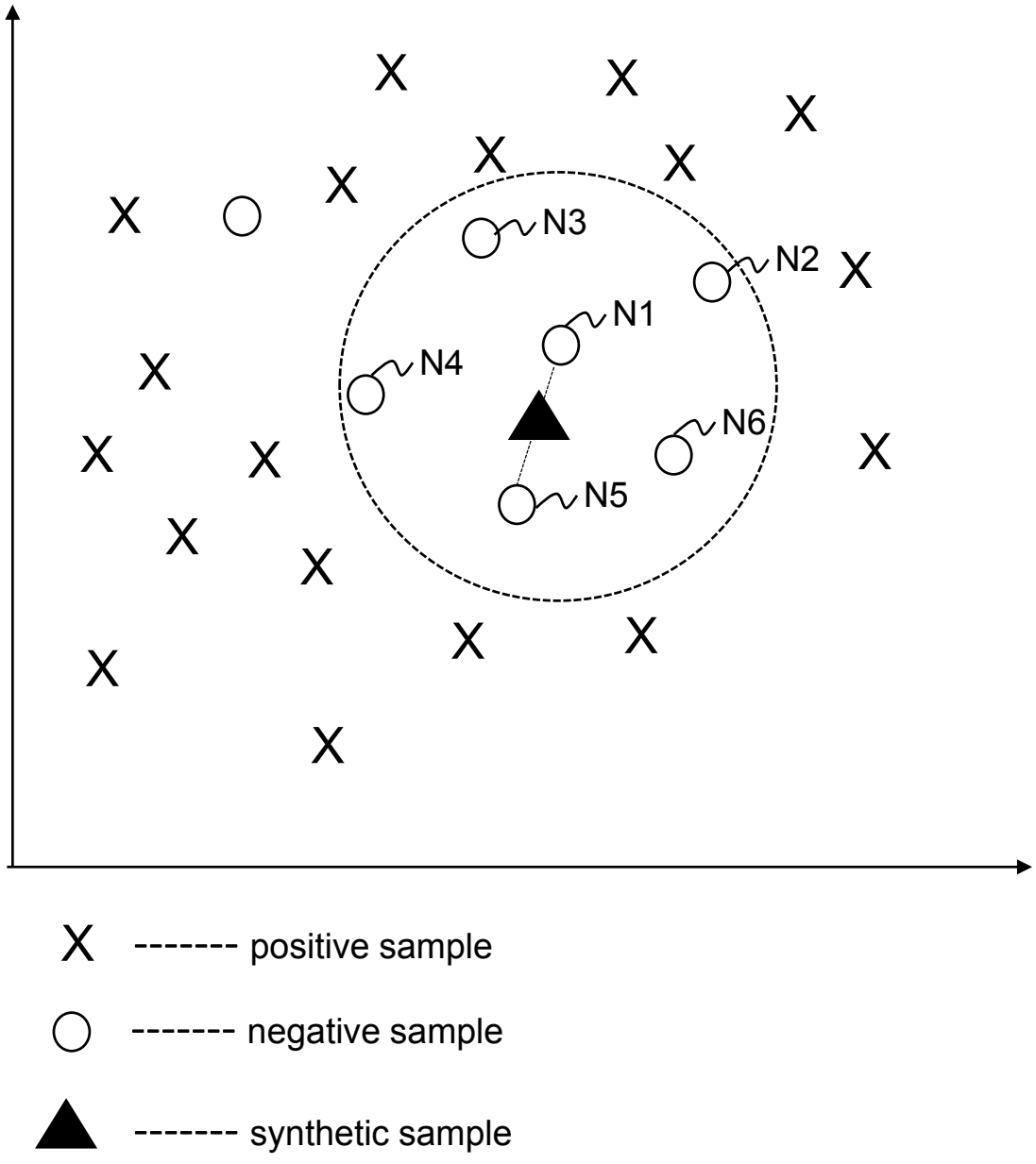

N3
N2
N1
N4
N6
N5
X ------- positive sample
○ ------- negative sample
▲ ------- synthetic sample

FIG. 8B

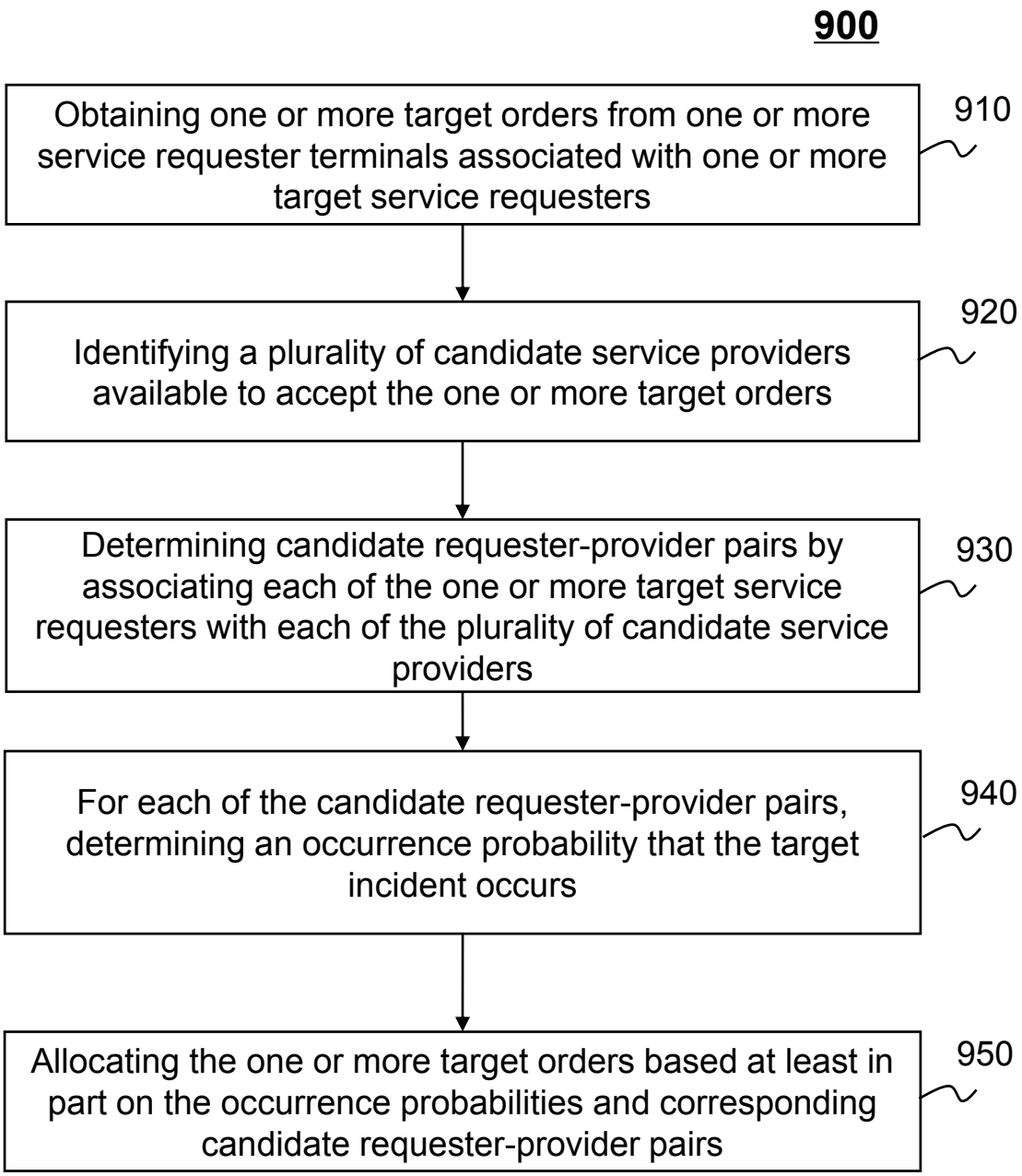

900
Obtaining one or more target orders from one or more service requester terminals associated with one or more target service requesters
910
Identifying a plurality of candidate service providers available to accept the one or more target orders
920
Determining candidate requester-provider pairs by associating each of the one or more target service requesters with each of the plurality of candidate service providers
930
For each of the candidate requester-provider pairs, determining an occurrence probability that the target incident occurs
940
Allocating the one or more target orders based at least in part on the occurrence probabilities and corresponding candidate requester-provider pairs
950

FIG. 9