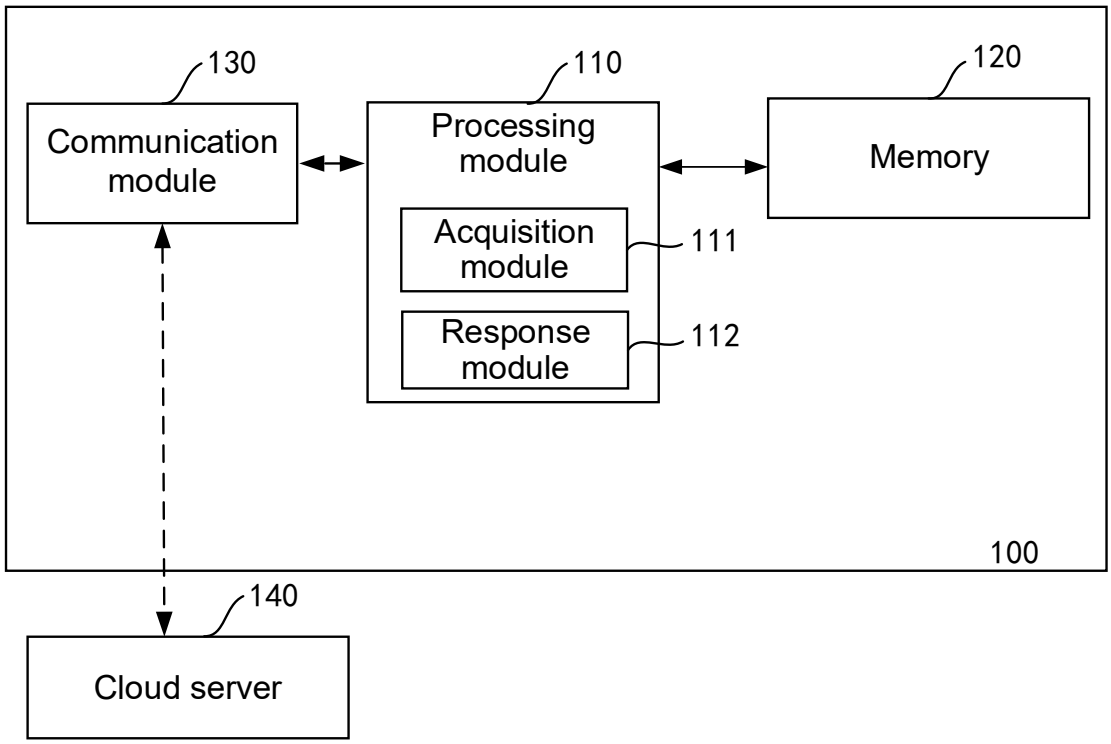
130
Communication module
110
Processing module
Acquisition module
111
Response module
112
120
Memory
100
140
Cloud server

FIG. 1

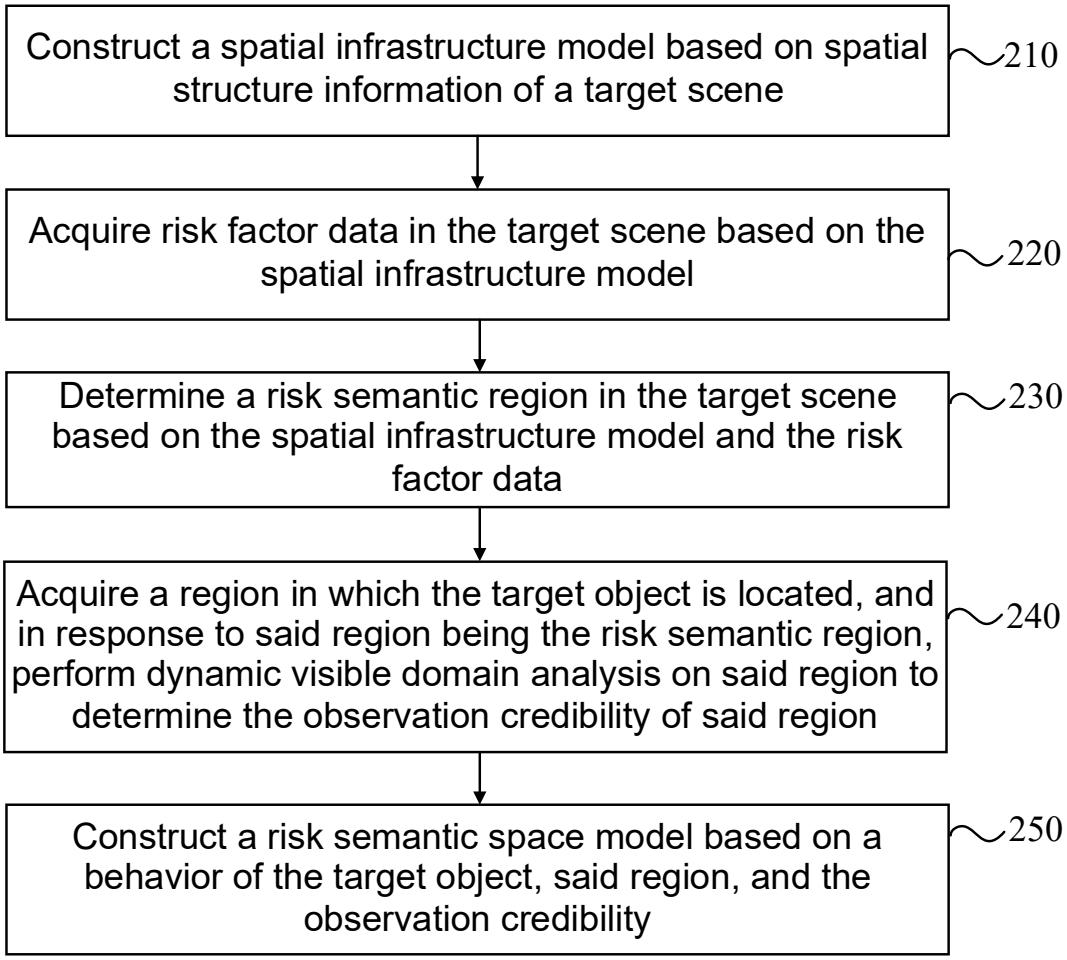
Construct a spatial infrastructure model based on spatial structure information of a target scene
210
Acquire risk factor data in the target scene based on the spatial infrastructure model
220
Determine a risk semantic region in the target scene based on the spatial infrastructure model and the risk factor data
230
Acquire a region in which the target object is located, and in response to said region being the risk semantic region, perform dynamic visible domain analysis on said region to determine the observation credibility of said region
240
Construct a risk semantic space model based on a behavior of the target object, said region, and the observation credibility
250

FIG. 2

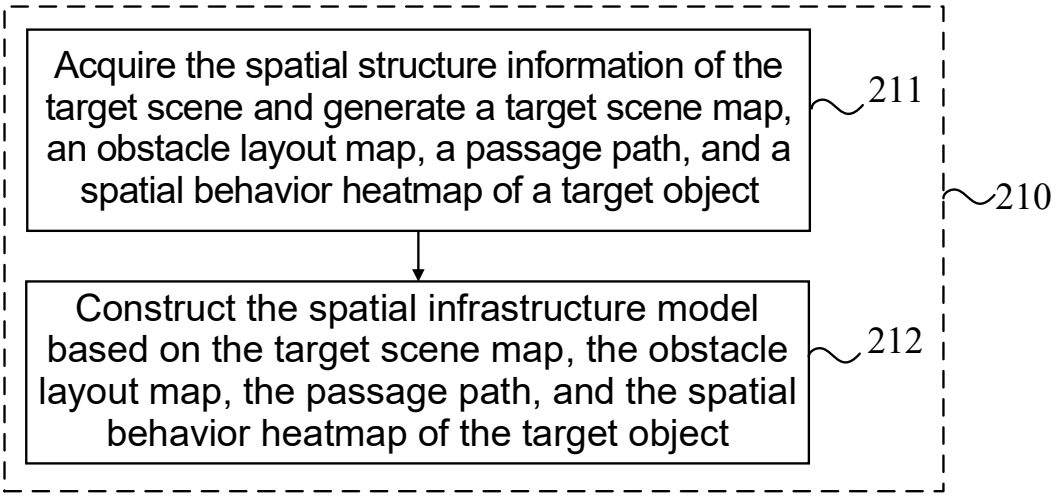
Acquire the spatial structure information of the target scene and generate a target scene map, an obstacle layout map, a passage path, and a spatial behavior heatmap of a target object
211
Construct the spatial infrastructure model based on the target scene map, the obstacle layout map, the passage path, and the spatial behavior heatmap of the target object
212
210

FIG. 3

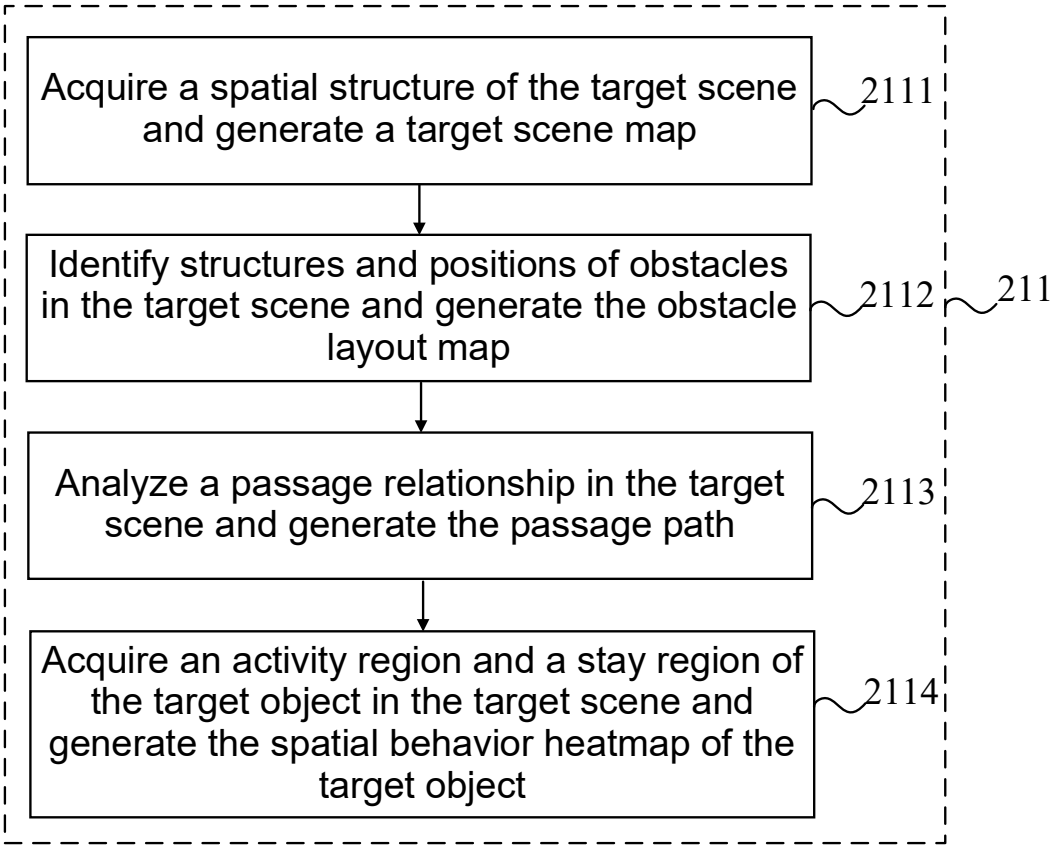
Acquire a spatial structure of the target scene and generate a target scene map
2111
Identify structures and positions of obstacles in the target scene and generate the obstacle layout map
2112
211
Analyze a passage relationship in the target scene and generate the passage path
2113
Acquire an activity region and a stay region of the target object in the target scene and generate the spatial behavior heatmap of the target object
2114

FIG. 4

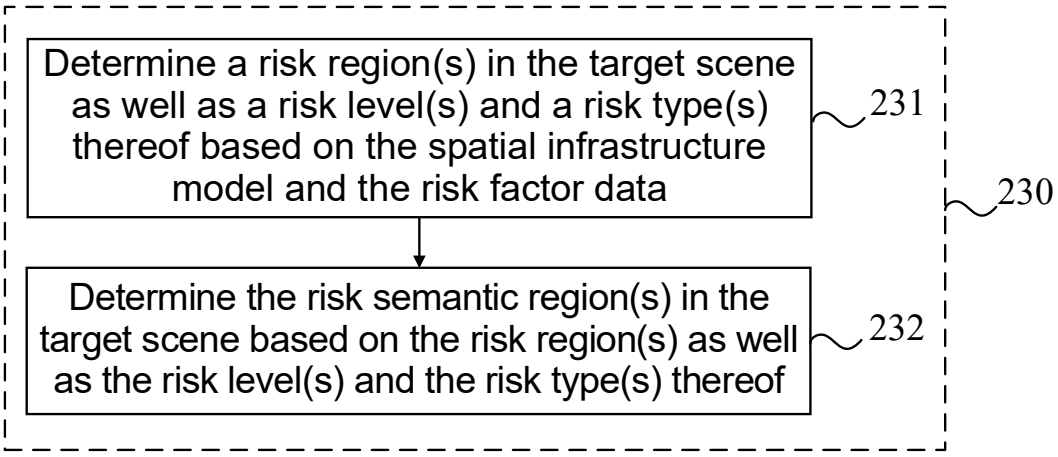
Determine a risk region(s) in the target scene as well as a risk level(s) and a risk type(s) thereof based on the spatial infrastructure model and the risk factor data
231
230
Determine the risk semantic region(s) in the target scene based on the risk region(s) as well as the risk level(s) and the risk type(s) thereof
232

FIG. 5

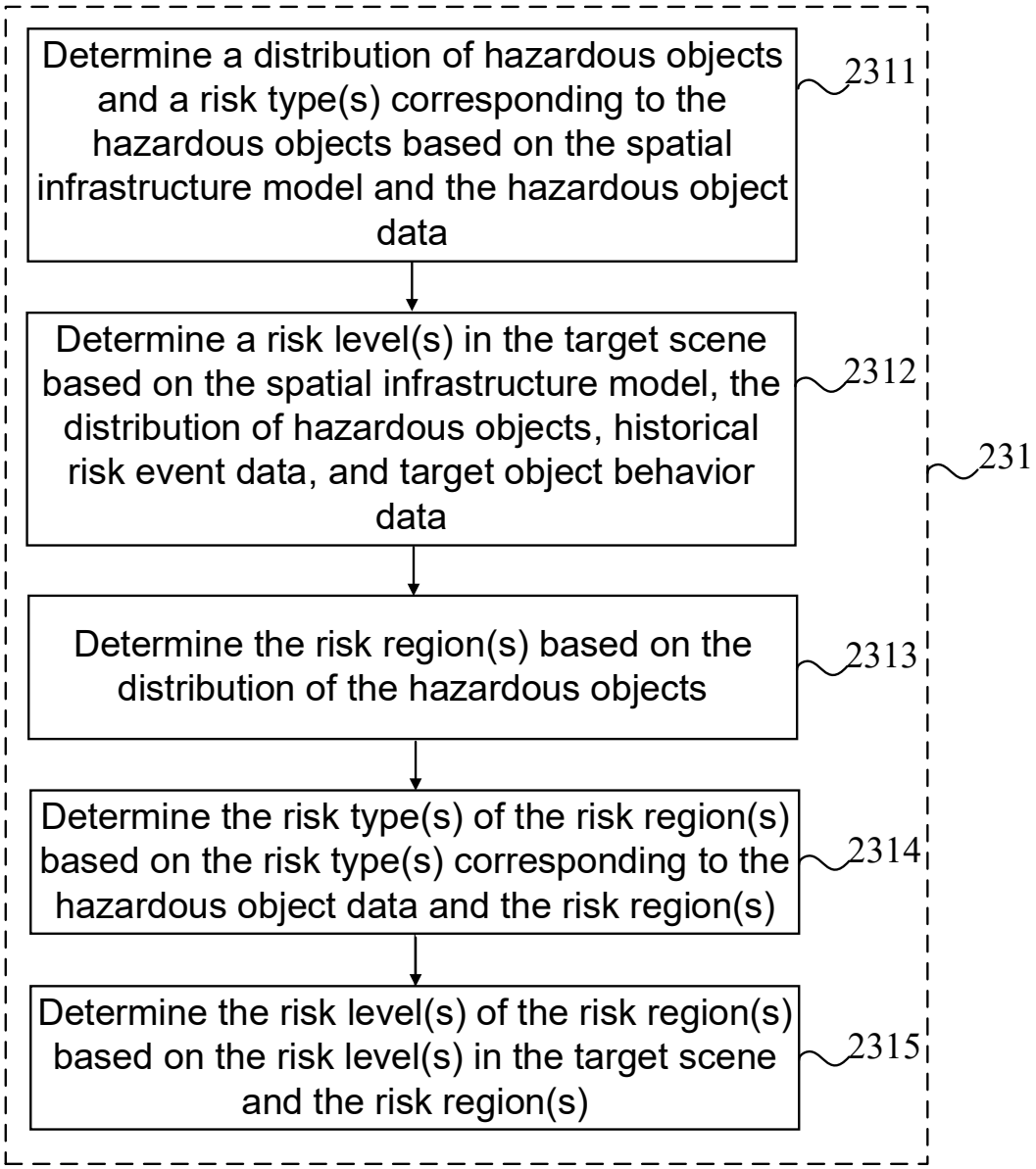
Determine a distribution of hazardous objects and a risk type(s) corresponding to the hazardous objects based on the spatial infrastructure model and the hazardous object data
2311
Determine a risk level(s) in the target scene based on the spatial infrastructure model, the distribution of hazardous objects, historical risk event data, and target object behavior data
2312
231
Determine the risk region(s) based on the distribution of the hazardous objects
2313
Determine the risk type(s) of the risk region(s) based on the risk type(s) corresponding to the hazardous object data and the risk region(s)
2314
Determine the risk level(s) of the risk region(s) based on the risk level(s) in the target scene and the risk region(s)
2315

FIG. 6

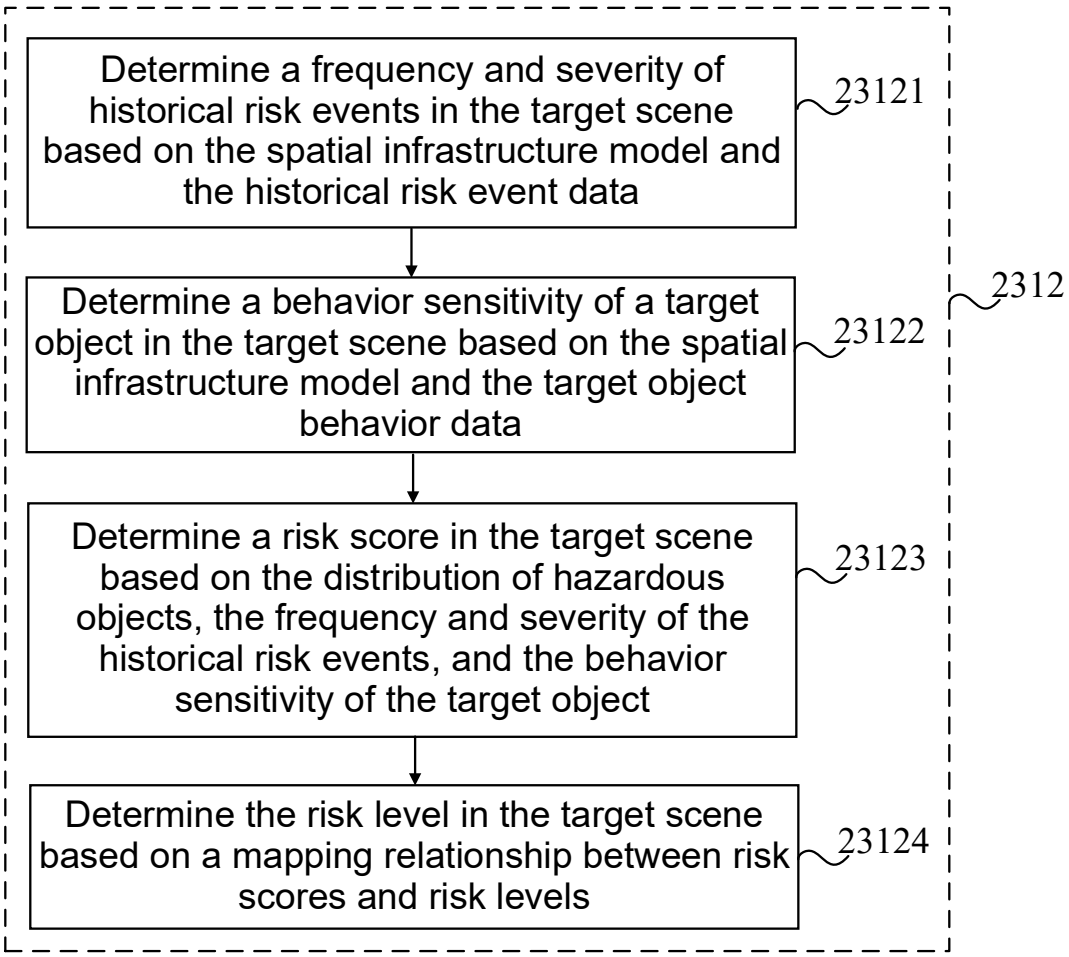
Determine a frequency and severity of historical risk events in the target scene based on the spatial infrastructure model and the historical risk event data
23121
Determine a behavior sensitivity of a target object in the target scene based on the spatial infrastructure model and the target object behavior data
23122
2312
Determine a risk score in the target scene based on the distribution of hazardous objects, the frequency and severity of the historical risk events, and the behavior sensitivity of the target object
23123
Determine the risk level in the target scene based on a mapping relationship between risk scores and risk levels
23124

FIG. 7

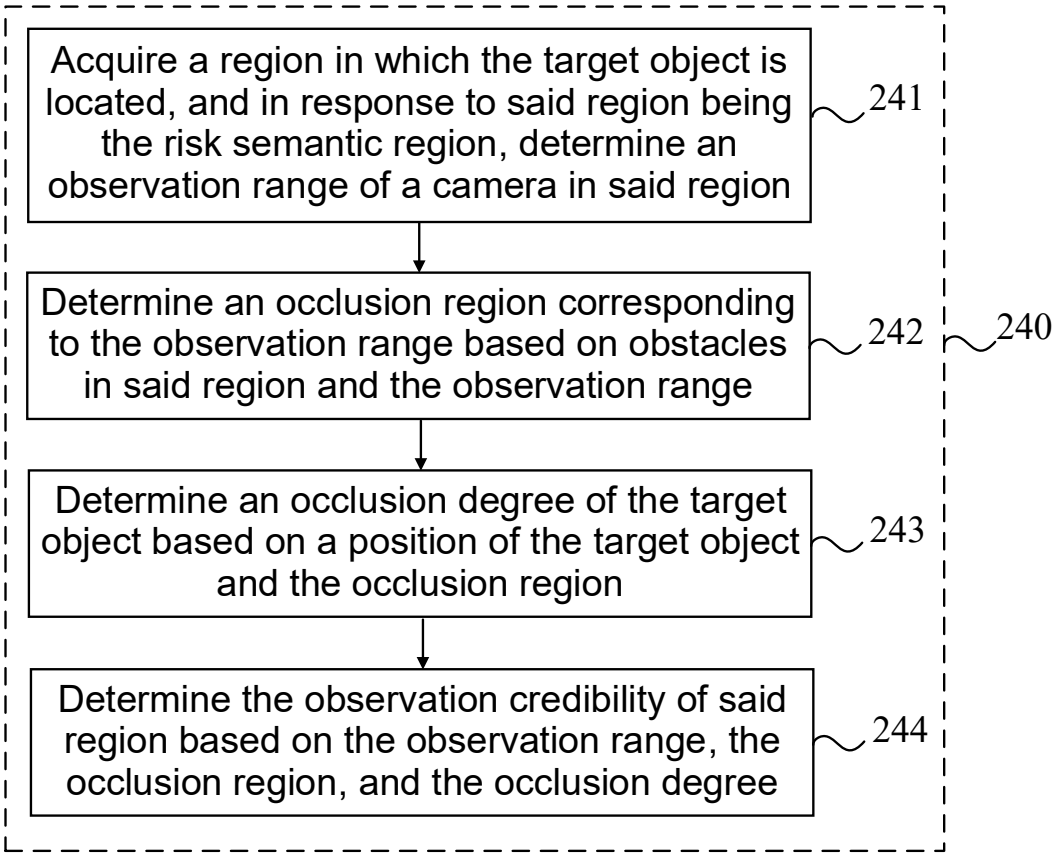
Acquire a region in which the target object is located, and in response to said region being the risk semantic region, determine an observation range of a camera in said region
241
Determine an occlusion region corresponding to the observation range based on obstacles in said region and the observation range
242
240
Determine an occlusion degree of the target object based on a position of the target object and the occlusion region
243
Determine the observation credibility of said region based on the observation range, the occlusion region, and the occlusion degree
244

FIG. 8

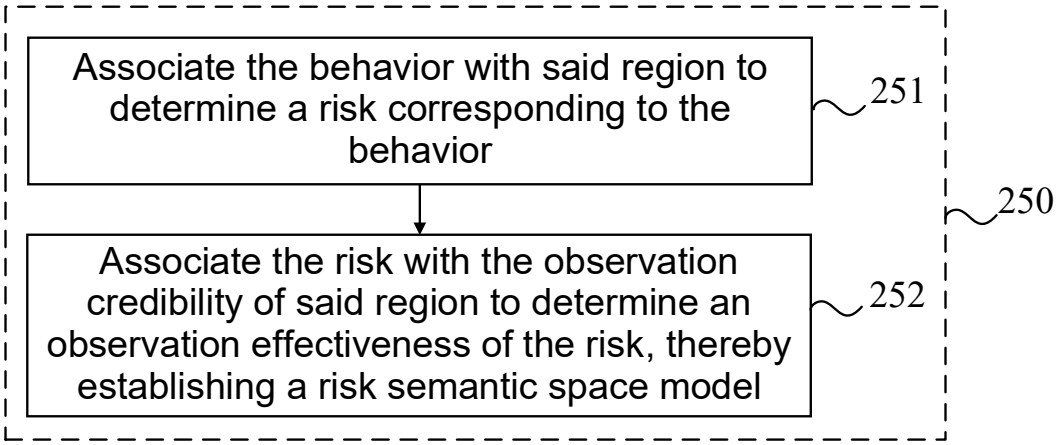
Associate the behavior with said region to determine a risk corresponding to the behavior
251
250
Associate the risk with the observation credibility of said region to determine an observation effectiveness of the risk, thereby establishing a risk semantic space model
252

FIG. 9

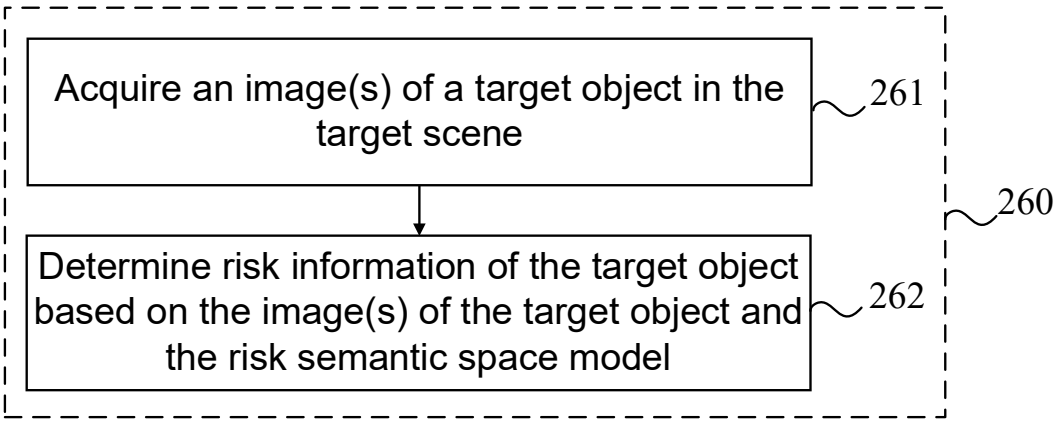
Acquire an image(s) of a target object in the target scene
261
Determine risk information of the target object based on the image(s) of the target object and the risk semantic space model
262
260

FIG. 10

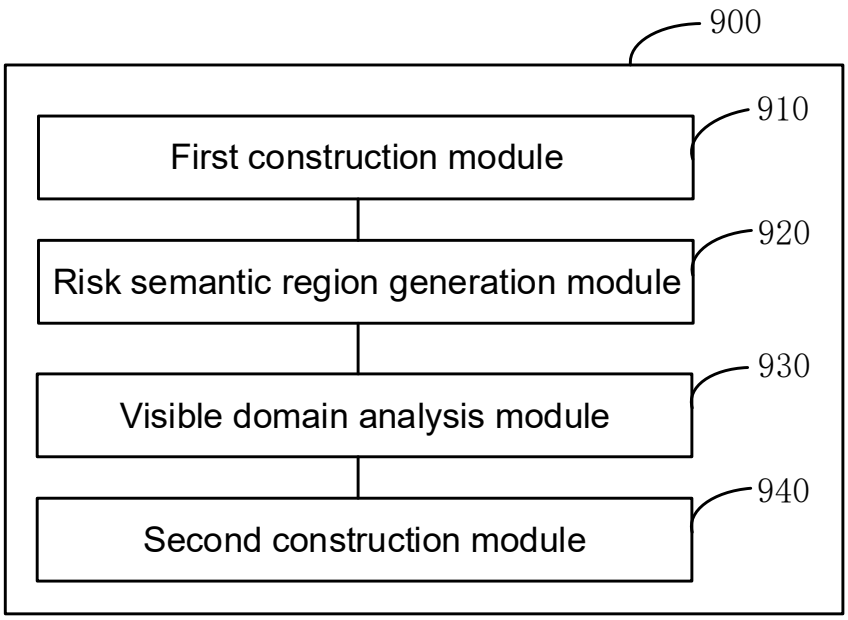
900
First construction module
910
Risk semantic region generation module
920
Visible domain analysis module
930
Second construction module
940

FIG. 11

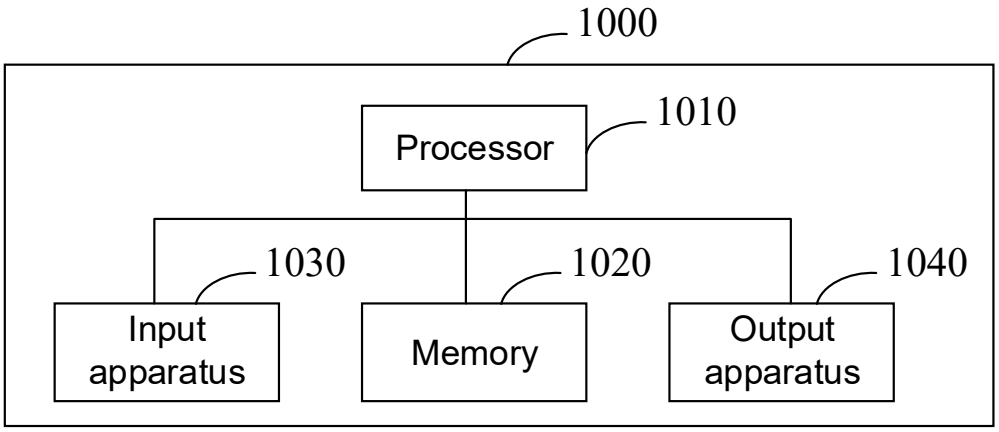
1000
Processor
1010
1030
1020
1040
Input apparatus
Memory
Output apparatus

FIG. 12