

METHODS, APPARATUSES, AND SYSTEMS FOR PROCESSING GAME IMAGES

TECHNICAL FIELD

[0001] The present disclosure relates to the field of computer vision technology, in particular to a method, an apparatus and a system for processing a game image.

BACKGROUND

[0002] Usually, during a game, various operations are performed by players, such as, placing a specified game marker according to game rules or betting a specified amount of chips. However, a wrong operation is inevitable in manual operations, which will negatively impact on a game result. Therefore, it is necessary to perform detection on game operations during the game.

SUMMARY

[0003] The present disclosure provides a method, an apparatus, and a system for processing a game image.

[0004] According to a first aspect of the embodiments of the present disclosure, a method of processing a game image is provided, including: obtaining a game image captured for a game area, the game area includes an operating area for operating a game prop and a preset marker; acquiring a first detection result of a game prop within the operating area and a second detection result of a preset marker within the operating area by performing a detection based on the game image; determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition; and generating an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

[0005] In some embodiments, determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet the first alert condition, includes: determining, based on the first detection result and the second detection result, whether the preset marker meets a marker normal condition corresponding to the game prop; and determining, in a case that the preset marker does not meet the marker normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0006] In some embodiments, determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating

area meet the first alert condition, includes: determining, based on the first detection result and the second detection result, whether the game prop meets a prop normal condition corresponding to the preset marker; and determining, in a case that the game prop does not meet the prop normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0007] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; the first detection result includes the number of the first game prop within the first operating area and the second detection result includes the number of the preset marker within the third operating area; and determining, based on the first detection result and the second detection result, whether the preset marker meets the marker normal condition corresponding to the game prop includes: determining, in a case that the number of the first game prop is lower than a predetermined threshold and the number of the preset marker is greater than 0, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0008] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; the first game prop includes a card, the first detection result includes card face information of a card within the first operating area; and the second detection result includes a type of the preset marker within the third operating area; and determining, based on the first detection result and the second detection result, whether the preset marker meets the marker normal condition corresponding to the game prop includes: determining a type of a corresponding reference marker based on the card face information of the card; and determining, in a case that the type of the reference marker is inconsistent with the type of the preset marker, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0009] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; and the first game prop includes a card, the first detection result includes card face information of a card within the first operating area, and the second detection result includes a number of the preset marker within the third operating area; and determining, based on the first detection result and the second detection result, whether the preset marker meets the marker normal condition

corresponding to the game prop includes: determining a reference number of a corresponding marker based on the card face information of the card; and determining, in a case that the reference number is inconsistent with the number of the preset marker, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0010] In some embodiments, the operating area further includes a second operating area which is an operating area for a second game prop. Accordingly, in a case of determining that the preset marker meets the marker normal condition corresponding to the first game prop and the number of the preset marker within the third operating area is not 0, determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet the first alert condition further includes: determining, based on the first detection result and the second detection result, whether the second game prop meets the prop normal condition corresponding to the preset marker; and determining, in a case that the second game prop does not meet the prop normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0011] In some embodiments, the second game prop includes game coins, the first detection result further includes a total amount of game coins within the second operating area, and the prop normal condition corresponding to the preset marker includes an amount range of game coins; and determining, based on the first detection result and the second detection result, whether the second game prop meets the prop normal condition corresponding to the preset marker includes: determining, in a case that the total amount of game coins within the second operating area is out of the amount range of game coins, that the second game prop does not meet the prop normal condition corresponding to the preset marker. The amount range of game coins is determined based on at least one of: a type of the preset marker within the third operating area; or a denomination of the game coins within the second operating area during a preset game phase.

[0012] In some embodiments, the operating area includes a second operating area and a third operating area, where the second operating area is an operating area for a second game prop and the third operating area is an operating area for the preset marker; the third operating area including two or more marker operating sub-areas and each marker operating sub-area corresponding to a game character; the second operating area including two or more prop operating sub-areas and each prop operating sub-area corresponding to a game character; the game character corresponding to the prop operating sub-area corresponds to

the game character corresponding to the marker operating sub-area in a one-to-one correspondence; the first detection result includes a prop operating sub-area where the second game prop is located in the second operating area; and the second detection result includes a marker operating sub-area where the preset marker is located in the third operating area. Accordingly, determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet the first alert condition further includes: determining, in a case that the marker operating sub-area where the preset marker is located in the third operating area and the prop operating sub-area where the second game prop locates in the second operating area correspond to different game characters, that the game prop and the preset marker within the operating area meet the first alert condition.

[0013] In some embodiments, the method further includes: determining, based on the first detection result and a historical detection result of the game prop, whether a current game prop within the operating area and a historical game prop within the operating area meet a preset second alter condition; and generating an alert message in a case that the current game prop and the historical game prop meet the second alter condition.

[0014] In some embodiments, the game prop includes game coins, the first detection result includes a current total amount of game coins within the operating area for a specified game participant during a current game phase, the historical detection result includes a historical total amount of game coins within the operating area for the specified game participant during a preset game phase; and determining, based on the first detection result and the historical detection result of the game prop, whether the current game prop within the operating area and the historical game prop within the operating area meet the preset second alter condition includes: determining, in a case that the current total amount of game coins exceeds the historical total amount of game coins, the current game prop within the operating area and the historical game prop within the operating area meet the second alter condition.

[0015] According to a second aspect of the embodiments of the present disclosure, an apparatus for processing a game image is provided, including: an obtaining module, configured to obtain a game image captured for a game area, the game area includes an operating area for operating a game prop and a preset marker; a first acquiring module, configured to acquire a first detection result of a game prop within the operating area by performing a detection based on the game image; a second acquiring module, configured to

acquire a second detection result of a preset marker within the operating area by performing a detection based on the game image; a determining module, configured to determine, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition; and an alert module, configured to generate an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

[0016] In some embodiments, the determining module is configured to determine, based on the first detection result and the second detection result, whether the preset marker meets a marker normal condition corresponding to the game prop; and determine, in a case that the preset marker does not meet the marker normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0017] In some embodiments, the determining module is configured to determine, based on the first detection result and the second detection result, whether the game prop meets a prop normal condition corresponding to the preset marker; and determine, in a case that the game prop does not meet the prop normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0018] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; the first detection result includes the number of the first game prop within the first operating area and the second detection result includes the number of the preset marker within the third operating area; and the determining module is configured to determine, in a case that the number of the first game prop is lower than a predetermined threshold and the number of the preset marker is greater than 0, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0019] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; the first game prop includes a card, the first detection result includes card face information of a card within the first operating area; and the second detection result includes a type of the preset marker within the third operating area; and the determining module is configured to: determine, a type of a corresponding reference marker based on the card face information of the card; and determine, in a case that the type of the reference marker is inconsistent with the type

of the preset marker, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0020] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; and the first game prop includes a card, the first detection result includes card face information of a card within the first operating area, and the second detection result includes a number of the preset marker within the third operating area; and the determining module is configured to: determine, a reference number of a corresponding marker based on the card face information of the card; and determine, in a case that the reference number is inconsistent with the number of the preset marker, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0021] In some embodiments, the operating area further includes a second operating area which is an operating area for a second game prop. Accordingly, in a case of determining that the preset marker meets the marker normal condition corresponding to the first game prop and the number of the preset marker within the third operating area is not 0, the determining module is further configured to: determine, based on the first detection result and the second detection result, whether the second game prop meets the prop normal condition corresponding to the preset marker; and determine, in a case that the second game prop does not meet the prop normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0022] In some embodiments, the second game prop includes game coins, the first detection result further includes a total amount of game coins within the second operating area, and the prop normal condition corresponding to the preset marker includes an amount range of game coins; and the determining module is configured to: determine, in a case that the total amount of game coins within the second operating area is out of the amount range of game coins, that the second game prop does not meet the prop normal condition corresponding to the preset marker. The amount range of game coins is determined based on at least one of: a type of the preset marker within the third operating area; or a denomination of the game coins within the second operating area during a preset game phase.

[0023] In some embodiments, the operating area includes a second operating area and a third operating area, where the second operating area is an operating area for a second game prop and the third operating area is an operating area for the preset marker; the third

operating area including two or more marker operating sub-areas and each marker operating sub-area corresponding to a game character; the second operating area including two or more prop operating sub-areas and each prop operating sub-area corresponding to a game character; the game character corresponding to the prop operating sub-area corresponds to the game character corresponding to the marker operating sub-area in a one-to-one correspondence; the first detection result includes a prop operating sub-area where the second game prop is located in the second operating area; and the second detection result includes a marker operating sub-area where the preset marker is located in the third operating area. Accordingly, determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet the first alert condition further includes: determining, in a case that the marker operating sub-area where the preset marker is located in the third operating area and the prop operating sub-area where the second game prop is located in the second operating area correspond to different game characters, that the game prop and the preset marker within the operating area meet the first alert condition.

[0024] In some embodiments, the apparatus further includes: a second alert condition determining module, configured to determine, based on the first detection result and a historical detection result of the game prop, whether a current game prop within the operating area and a historical game prop within the operating area meet a preset second alter condition; and the alert module is configured to: generate an alert message in a case that the current game prop and the historical game prop meet the second alter condition.

[0025] In some embodiments, the game prop includes game coins, the first detection result includes a current total amount of game coins within the operating area for a specified game participant during a current game phase, the historical detection result includes a historical total amount of game coins within the operating area for the specified game participant during a preset game phase; and the second alert condition determining module, configured to determine, in a case that the current total amount of game coins exceeds the historical total amount of game coins, the current game prop within the operating area and the historical game prop within the operating area meet the preset second alter condition.

[0026] According to a third aspect of the embodiments of the present disclosure, a system of processing a game image is provided, including: an image acquiring unit, set around a game area for capturing the game area to obtain a game image, the game area includes an operating area for operating a game prop and a preset marker; and a processing unit which

is connected to the image acquiring unit through communication, configured to: acquire a first detection result of a game prop within the operating area and a second detection result of a preset marker within the operating area by performing a detection based on the game image; determine, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition; and generate an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

[0027] According to a fourth aspect of the embodiments of the present disclosure, a computer readable storage medium having a computer program stored thereon is provided, when the computer program is executed by a processor, the method according to any one of the embodiments is implemented.

[0028] According to a fifth aspect of the embodiments of the present disclosure, a computer device is provided, which includes a memory, a processor, and a computer program stored on the memory and executable on the processor, when the computer program is executed by the processor, the method according to any one of the embodiments is implemented.

[0029] In the embodiments of the present disclosure, by detecting a game prop and a preset marker involved in a game image, a first detection result and a second detection result are acquired respectively for determining whether the game prop and the preset marker meet a preset first alert condition, and in a case that the first alert condition is met, an alert message is generated automatically. In this way, wrong operations to the game prop and/or the preset marker within the game area can be detected automatically. As the above process does not involve any manual operations, it has relatively high detection efficiency and relatively low detection cost.

[0030] It should be understood that the general description and the following detailed description are only exemplary and explanatory, and cannot limit the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate examples consistent with the present disclosure and, together with the description, serve to explain the solutions of the disclosure.

[0032] FIG. 1 is a flow chart illustrating a method of processing a game image according to an embodiment of the present disclosure;

[0033] FIG. 2 is a schematic diagram illustrating a game area according to an embodiment of the present disclosure;

[0034] FIG. 3 is a schematic diagram illustrating a system of processing a game image according to an embodiment of the present disclosure;

[0035] FIG. 4 is a block diagram illustrating an apparatus for processing a game image according to an embodiment of the present disclosure; and

[0036] FIG. 5 is a schematic structure diagram illustrating a computer device according to an embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0037] Exemplary embodiments will be described in detail herein, with the illustrations thereof represented in the drawings. When the following descriptions involve the drawings, like numerals in different drawings refer to like or similar elements unless otherwise indicated. The specific manner described in the following exemplary embodiments does not represent all embodiments consistent with the present disclosure. Rather, they are merely examples of apparatuses and methods consistent with some aspects of the present disclosure as detailed in the appended claims. In addition, the term "at least one" as used herein means any one of multiple or any combination of at least two of multiple.

[0038] The terminology used in the present disclosure is for the purpose of describing particular embodiments only and is not intended to limit the present disclosure. The singular forms 'a', 'said' and 'the' used in the present disclosure and the appended claims are also intended to include the majority of forms unless the context clearly indicates other meanings. It should also be understood that the term 'and/or' as used herein refers to and includes any or all possible combinations of one or more associated listed items.

[0039] It should be understood that although terms like first, second, third, etc. may be used to describe various information in this disclosure, the information should not be limited to these terms. These terms are only used to distinguish the same type of information from each other. For example, without departing from the scope of the present disclosure, first information may also be referred to as second information, and similarly, second information may also be referred to as first information. Depending on the context, the word "if" as used herein may be interpreted as "when" or "upon" or "in response to determining".

[0040] In order to enable those skilled in the art to better understand the technical solutions in the embodiments of the present disclosure, and to enable the above-described objects, features and advantages of the embodiments of the present disclosure to be more

clearly understandable, the technical solutions in the embodiments of the present disclosure are described in further detail below in conjunction with the accompanying drawings.

[0041] As shown in FIG. 1, embodiments of the present disclosure provide a method of processing a game image, including step 101 to step 105.

[0042] At step 101, a game image captured for a game area is obtained, the game area includes an operating area for operating a game prop and a preset marker.

[0043] At step 102, a first detection result of a game prop within the operating area is acquired by performing a detection based on the game image.

[0044] At step 103, a second detection result of a preset marker within the operating area is acquired by performing a detection based on the game image.

[0045] At step 104, whether the game prop and the preset marker within the operating area meet a preset first alert condition is determined based on the first detection result and the second detection result.

[0046] At step 105, an alert message is generated in a case that the game prop and the preset marker within the operating area meet the first alert condition.

[0047] In step 101, at least one image acquiring unit, such as, a camera or a pick-up head, can be set around a game area for capturing the game area to obtain a game image. The game area can include an operating area for operating a game prop and a preset marker. An operating area for operating the game prop and an operating area for operating the preset marker may be the same operating area, i.e., both the game prop and the preset marker can be operated in the same operating area. Alternatively, an operating area for operating the game prop and an operating area for operating the preset marker may be different operating areas, i.e., in the game area, a part of the operating area is only for operating the game prop and another part of the operating area is only for operating the preset marker. Besides the above operating area, the game area may also include other areas, and locations, functions and the number of the other areas can be set according to actual needs, which are not limited in the present disclosure.

[0048] The above-mentioned game prop indicates a prop used during a game, such as, pieces, dices, cards, game coins and so on. The preset marker can be used to mark information of the game, such as, a game phase, a game participant currently performing an operation, a game character currently being operated, a loss ratio of the game and so on. A game participant indicates a real object participating in the game, a game character indicates

a virtual character involved in content of the game, and a game participant can select a game character and participate in the game as the game character.

[0049] Taking that the operating area for operating the game prop and the operating area for operating the preset marker are different operating areas as an example, the operating area for operating the game prop can be referred to as a prop operating area, and the operating area for operating the preset marker can be referred to as a marker operating area. Various game props and/or various preset markers are usually used during the game, and in a game involving two or more game participants, different game participants may have game prop and/or preset marker corresponding to themselves. Therefore, in order to distinguish different game participants, different prop operating areas and/or different marker operating areas can be set for different game participants respectively. The number of both prop operating areas and marker operating areas can correspond to the number of game participants. Assuming that the number of game participants is N , the number of prop operating areas and the number of marker operating areas can be equal to N or an integer multiple of N . Certainly, the quantitative relationship between the game participants and the prop operating areas and/or the marker operating areas in the embodiments of the present disclosure is not limited to this, for example, the number of corresponding prop operating areas and/or the marker operating areas can depend on the game participant, and the above-mentioned quantitative relationship can be set according to needs of the game, which is not limited in the present disclosure.

[0050] In addition, different game characters may also have game props and/or preset markers corresponding to themselves. Different prop operating areas and/or different marker operating areas can be set for different game characters respectively. The quantitative relationship between the game characters with at least one of the prop operating areas or the marker operating areas is similar to the quantitative relationship between the game participants with at least one of the prop operating areas or the marker operating areas, which is not repeated here.

[0051] As shown in FIG. 2, which is a schematic diagram illustrating an operating area 200 within a game area according to some embodiments, where the game played in the game area is a card game. In the card game, there are two game characters, character A and character B , and up to three game players (i.e., game participants) may participate together, these three game players are referred to as player a , player b , and player c . During the game, a certain number of cards can be issued to character A and character B , and game results of

character *A* and character *B* are determined by comparing the cards. Each game player can guess the game results of character *A* and character *B* respectively, and operate a certain amount of game coins according to the guessed results.

[0052] The operating area 200 includes prop operating areas 201 and 202 for operating game props (e.g., cards), and the prop operating areas 201 and 202 correspond to game areas of character *A* and character *B* respectively. The operating area 200 further includes prop operating areas 203, 204, and 205, which correspond to player *a*, player *b*, and player *c* respectively, and are used to operate game coins of corresponding players. The operating area 200 further includes operating areas 206 to 211 for operating a preset marker that represents a game rule under which a game participant is allowed to perform a specific operation. The preset marker can be placed in a case that the game enters a designated game phase, and when the preset marker is placed in a designated area, it indicates that the game enters a phase proceeded under the game rule represented by the preset marker. The marker operating areas 206, 207 and 208 correspond to character *A*; and the marker operating areas 209, 210 and 211 correspond to character *B*. Meanwhile, the marker operating areas 206 and 209 correspond to player *a*, the marker operating areas 207 and 210 correspond to player *b*, and the marker operating areas 208 and 211 correspond to player *c*.

[0053] Those skilled in the art can understand that the operating area 200 described above is only an exemplary illustration, and the type and arrangement of the operating area, the number of characters, the number of players, the type and the number of game props, etc. in this disclosure are not limited to those shown in the figure.

[0054] In step 102 and step 103, the game prop and the preset marker may be detected from the game image respectively to obtain a first detection result for the one or more game props and a second detection result for the one or more preset markers. The first detection result may include, but is not limited to, at least one of the number, type, location, public state, pose, style, etc. of the game prop, and the second detection result may include, but is not limited to, at least one of the number, type, location, pose, style, etc. of the preset marker. In some embodiments, a convolutional neural network can be used to perform a detection on the game image to obtain the first detection result and the second detection result. It should be noted that step 102 and step 103 may be performed simultaneously, or step 102 may be performed first and then step 103, or step 103 may be performed first and then step 102. In fact, as long as the first detection result of the game prop within the operating area and the second detection result of the preset marker within the operating area can be

obtained by performing a detection on the game image, the order in which these two steps are performed is not limited in the present disclosure.

[0055] Taking that the first detection result for the one or more game props includes the number of game props as an example, the number of game props may include a total number of game props within the operating area. In a case where the operating area includes a plurality of sub-areas, the number of game props in each sub-area may also be included.

[0056] The type of game prop can be set according to actual needs, for example, for game props in a card game, cards with different card face information belong to different types, and for game props in a coin game, game coins with different denominations belong to different types.

[0057] The location of a game prop can be used to indicate the operating area to which the game prop belongs or the sub-area to which the game prop belongs in the operating area.

[0058] The public state of a game prop can be used to indicate whether some information of the game prop (e.g., the card face information of a prop in a card game) is public.

[0059] The pose of a game prop may be used to indicate a placement orientation of the game prop, such as, horizontally orientated or vertically orientated. Alternatively, the pose of the game prop may be used to indicate a combined placement of a plurality of game props, for example, stacked placement or flat placement.

[0060] The style of a game prop is used to indicate the style of the game prop in terms of shapes, colors, patterns, etc.

[0061] The definition of the number, type, location, pose, style and other information of the preset marker is similar to the definition of corresponding information of the game prop, and can be referred to the corresponding information of the game prop, which will not be repeated here.

[0062] In steps 104 and 105, placing one or more preset markers based on the game prop is expected. For example, at least one item of the information of a placement timing of the preset markers, a type of the preset markers, a quantity of the preset markers, a location of the preset markers, a game participant corresponding to the preset markers, a game character corresponding to the preset markers and the like is expected to match the information of the game prop. Therefore, a first alert condition between the game prop and the preset marker can be set in advance, and the first alert condition can be set based on the type of the game, which is not limited in the present disclosure. Whether the game prop and the preset marker meet the first alert condition is determined through the first detection result and the second

detection result detected from the game image, such that whether the game prop and/or the preset marker are operated correctly during the game can be determined.

[0063] In some embodiments, whether the first alert condition is satisfied can be determined by determining whether a marker normal condition is satisfied. Specifically, whether the preset marker meets a marker normal condition corresponding to the game prop can be determined based on the first detection result and the second detection result. In a case that the preset marker does not meet the marker normal condition, it can be determined that the game prop and the preset marker within the operating area meet the first alert condition; and in a case that the preset marker meets the marker normal condition, it can be determined that the game prop and the preset marker within the operating area do not meet the first alert condition.

[0064] In this embodiment, information of the game prop is taken as a basis for determining a condition that the preset marker should meet, for example, the information of the game prop obtained based on the first detection result is In0, the information of the preset marker corresponding to In0 is In1, and the information of the preset marker determined based on the second detection result is In2. Only when In1 matches In2, it is determined that the marker normal condition is satisfied and the first alert condition is not satisfied.

[0065] In other embodiments, whether the first alert condition is satisfied can be determined by determining whether a prop normal condition is satisfied. Specifically, whether the game prop meets a prop normal condition corresponding to the preset marker can be determined based on the first detection result and the second detection result. In a case that the game prop does not meet the prop normal condition, it can be determined that the game prop and the preset marker within the operating area meet the first alert condition; and in a case that the game prop meets the prop normal condition, it can be determined that the game prop and the preset marker within the operating area do not meet the first alert condition.

[0066] In this embodiment, the information of the preset marker is taken as a basis for determining a condition that the game prop should meet, for example, the information of the preset marker obtained based on the second detection result is Rn0, the information of the game prop corresponding to Rn0 is Rn1, and the information of the game prop determined based on the first detection result is Rn2. Only when Rn1 matches Rn2, it is determined that the prop normal condition is satisfied and the first alert condition is not satisfied.

[0067] Each of these two situations is described in detail below. In some embodiments, the operating area includes a first operating area and a third operating area, the first operating area is an operating area for one or more first game props and the third operating area is an operating area for one or more preset markers. The first detection result includes the number of first game props within the first operating area and the second detection result includes the number of preset markers within the third operating area. In a case that the number of first game props is lower than a predetermined threshold and the number of preset markers is greater than 0, it can be determined that the preset markers do not meet the marker normal condition corresponding to the game prop. In a case that the number of first game props is greater than the predetermined threshold, or the number of preset markers is equal to 0, it can be determined that the preset markers meet the marker normal condition corresponding to the game prop.

[0068] The predetermined threshold can be stored in advance, or a quantitative relationship between the number of first game props and the number of preset markers can be placed can be stored in advance, the quantitative relationship can be shown in the following table.

Table 1

The number of first game props	The number of preset markers can be placed
0	0
1	0
2	0
3	1, 2, 3,
4	1, 2, 3,

[0069] In the embodiment described in the above table, a preset marker is allowed to be placed only when the number of first game props is greater than or equal to 3 (i.e., the predetermined threshold), and the number of preset markers can be placed can be 1, 2, 3 and so on. Certainly, in the embodiments of the present disclosure, the predetermined threshold and the number of preset markers can be placed can be set according to actual situations, which are not limited to the situation shown in the table and will not be repeated here.

[0070] In the present embodiment, the first operating area and the third operating area may be the same area or different areas, and a first game prop may be a card or a game prop of other type. Embodiments of the present disclosure can be used to determine whether a preset marker is allowed to be placed currently. In the present embodiment, a preset marker is allowed to be placed in the third operating area only when the number of first game props within the first operating area exceeds a predetermined threshold (e.g., 3), otherwise a preset marker is not allowed to be placed in the third operating area. Through the solution of the present embodiment, it is possible to automatically detect a situation that a preset marker is placed already while the number of first game props is not enough.

[0071] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for one or more first game props and the third operating area is an operating area for one or more preset markers. A first game prop includes a card, the first detection result includes card face information of a card within the first operating area, and the second detection result includes a type of a preset marker within the third operating area. A type of a reference marker can be determined based on the card face information of the card. In a case that the type of the reference marker is inconsistent with the type of the preset marker, it is determined that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0072] In the present embodiment, the type of preset markers that can be placed depends on the card face information. The card face information can include a points number and/or a suit of a card, which can be obtained by performing points number and/or suit identification on the card in the obtained game image. The type of the reference marker can correspond to the points number and/or the suit of the card. For example, in a case where the points number on card face is 1, a preset marker of the first type can be placed, i.e., the type of the reference marker may be the first type; in a case where the points number on card face is 2 or 3, a preset marker of the second type can be placed, i.e., the type of the reference marker can be the second type; in a case where the suits on card face of each card are the same, a preset marker of the third type or the fourth type or the like can be placed, and accordingly, the type of the reference marker can be the third type or the fourth type or the like.

[0073] In a possible implementation, the second detection result includes the type of the preset marker within the third operating area, at this point the type of the reference marker can be directly compared with the type of the preset marker to determine their consistency.

In another possible implementation, different types of preset markers may have different visual characteristics, such as, sizes, colors, shapes, etc. In this case, visual characteristics of the preset marker included in the second detection result can be compared with visual characteristics of the reference marker to indirectly determine whether the type of the preset marker is consistent with the type of the reference marker. Only when the types of the two are consistent, it is determined that the preset marker meets the marker normal condition corresponding to the game prop, otherwise it is determined that the preset marker does not meet the marker normal condition corresponding to the game prop. In the present embodiment, it is possible to automatically detect a situation where a preset marker of a type that is not allowed to be placed is placed under given card face information.

[0074] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for one or more first game props and the third operating area is an operating area for one or more preset markers. The first game prop includes a card, the first detection result includes card face information of a card within the first operating area, and the second detection result includes the number of preset markers within the third operating area. A reference number of corresponding markers can be determined based on the card face information of the card. In a case that the reference number is inconsistent with the number of preset markers, it can be determined that the preset markers do not meet the marker normal condition corresponding to the game prop.

[0075] In the present embodiment, the number of preset markers that can be placed depends on the card face information. For example, the reference number of markers is $n1$ in a case where a sum of points number on card face of each card is within a predetermined range of points number; the reference number of markers is $n2$ in a case where the number of cards with a points number on card face equal to a specified points number reaches a predetermined number, and the like. Only in a case that the reference number is consistent with the number of preset markers, it is determined that the preset marker meets the marker normal condition corresponding to the game prop, otherwise it is determined that the preset marker does not meet the marker normal condition corresponding to the game prop. In the present embodiment, it is possible to automatically detect a situation where the number of preset markers placed under the given card face information is out of a range of number allowed to be placed.

[0076] In some embodiments, the operating area further includes a second operating area which is an operating area for a second game prop, in a case of determining that the preset

marker meets the marker normal condition corresponding to the first game prop and the number of preset markers within the third operating area is not zero, other conditions can be further based on to determine whether the game prop and the preset marker within the operating area meet the first alert condition. For example, whether the second game prop meets a prop normal condition corresponding to the preset marker can be determined based on the first detection result and the second detection result. In a case that the second game prop does not meet the prop normal condition, it can be determined that the game prop and the preset marker within the operating area meet the first alert condition.

[0077] In the present embodiment, the operating area can include at least two sub-areas, and different sub-areas are used for operating different game props. The different game props may be of different types. For example, one sub-area is for operating game props in a card game, another sub-area is for operating game props in a coin game, and yet another sub-area is for operating game props in a dice game.

[0078] In the present embodiment, the first detection result includes detection results of two game props, and information of the two game props can be combined together to determine whether the game prop and the preset marker within the operating area meet the first alert condition. Only when the preset marker meets the marker normal condition corresponding to the first game prop and the second game prop meets the prop normal condition corresponding to the preset marker, it is determined that the first alert condition is not satisfied. If one of the above two conditions is not satisfied, it is determined that the first alert condition is satisfied. The marker normal condition corresponding to the first game prop mentioned here can include the marker normal condition described in at least one of the above embodiments. For example, it may include that the number of preset markers is greater than 0 and the number of first game props within the first operating area exceeds a predetermined threshold. In a case where the first game prop is a card, it may further include that the type of the preset marker is consistent with the type of the reference marker determined based on the card face information of the card, or it may include that the number of preset markers is consistent with the reference number determined based on the card face information of the card.

[0079] In some embodiments, the second game prop includes game coins, the first detection result further includes a total amount of game coins within the second operating area, and the prop normal condition corresponding to the preset marker includes an amount range of game coins. In a case that the total amount of game coins within the second

operating area is out of the amount range of game coins, it can be determined that the second game prop does not meet the prop normal condition corresponding to the preset marker. In a case that the total amount of game coins within the second operating area is within the amount range of game coins, it can be determined that the second game prop meets the prop normal condition corresponding to the preset marker.

[0080] In the present embodiment, the amount range of game coins that can be placed in the second operating area depends on the preset markers placed in the third operating area. Through the above manners, it is possible to automatically detect whether the total amount of game coins placed in the second operating area exceeds the amount range of game coins corresponding to the preset marker placed in the third operating area.

[0081] In the embodiments of the present disclosure, whether an error is occurred in operations on the game coins can be detected automatically. The total amount of game coins can be obtained by performing a detection on a top view or a side view of a second operating area containing game coins. The amount range of game coins may be determined based on a type of the preset marker within the third operating area, for example, the amount range of game coins may depend on the type of the preset marker. Or, the amount range of game coins may be determined based on denominations of the game coins within the second operating area during a predetermined game phase, the predetermined game phase may be a game phase prior to the current game phase. Alternatively, the amount range of game coins may include several integer multiples of a sum of denominations of game coins within the second operating area during the predetermined game phase, for example, during the predetermined game phase, a sum of denominations of game coins within the second operating area is 500, and the amount range of game coins may include 1, 2 and 3 times of the sum of denominations, for example, the amount range of game coins includes 500, 1000 and 1500. Alternatively, during the predetermined game phase, the upper limit of the amount range of game coins does not exceed the sum of denominations of game coins within the second operating area. Alternatively, the amount range of game coins may be jointly determined based on the type of the preset marker within the third operating area and the denominations of game coins within the second operating area during the predetermined game phase. In addition, the amount range of game coins may be determined based on other conditions or based on a combination of other conditions and at least any one of the above-mentioned conditions.

[0082] In some embodiments, the operating area includes a second operating area and a third operating area, where the second operating area is an operating area for one or more second game props, and the third operating area is an operating area for one or more preset markers. The third operating area includes two or more marker operating sub-areas and each marker operating sub-area corresponds to a game character. The second operating area includes two or more prop operating sub-areas and each prop operating sub-area corresponds to a game character. The game character corresponding to the prop operating sub-area corresponds to the game character corresponding to the marker operating sub-area in a one-to-one correspondence. The first detection result includes a prop operating sub-area where the second game prop is located in the second operating area, and the second detection result includes a marker operating sub-area where the preset marker is located in the third operating area. In a case that the marker operating sub-area where the preset marker is located in the third operating area and the prop operating sub-area where the second game prop is located in the second operating area correspond to different game characters, it is determined that the game prop and the preset marker within the operating area meet the first alert condition.

[0083] In the present embodiment, whether the second game prop and the preset marker are placed in a sub-area corresponding to the same game character can be automatically detected. Taking that the number of game characters is 2 as an example, the third operating area can include a marker operating sub-area m and a marker operating sub-area n , where the marker operating sub-area m corresponds to game character A and the marker operating sub-area n corresponds to game character B . The second operating area includes a prop operating sub-area r and a prop operating sub-area k , where the prop operating sub-area r corresponds to the game character A and the prop operating sub-area k corresponds to the game character B . In the present embodiment, the marker operating sub-area where the marker is located and the prop operating sub-area where the second game prop is located either both correspond to the game character A or both correspond to the game character B . Location ranges of sub-areas of the marker operating sub-area m , the marker operating sub-area n , the prop operating sub-area r and the prop operating sub-area k in the game image can be predetermined. Then in which prop operating sub-area the second game prop is located can be determined based on the first detection result, and in which marker operating sub-area the preset marker is located can be determined based on the second detection result. The second game prop may be game coins or a game prop of other type.

[0084] In some embodiments, whether a current game prop within the operating area and a historical game prop within the operating area meet a preset second alert condition can be determined based on the first detection result and a historical detection result of the game prop. In a case that the current game prop within the operating area and the historical game prop within the operating area meet the second alert condition, an alert message can be generated.

[0085] The historical detection result can be a detection result of a game prop acquired during a historical game phase of a game. Each time a detection result of a game prop is acquired, the detection result of the game prop and detection time, or the detection result of the game prop and identification information of the corresponding game phase can be stored in a cache, which can be read from the cache when needed. Information of game props of some game phases needs to match information of game props of the historical game phase. For example, a total amount of game coins placed during the current game phase and a total amount of game coins placed during the historical game phase need to meet a certain amount relationship, or the number of cards placed during the current game phase and the number of cards placed in the historical game phase need to meet a certain quantitative relationship, etc. In the present embodiment, a situation that the information of the game prop during the historical game phase is not matched can be automatically detected.

[0086] In some embodiments, the game prop includes game coins, the first detection result includes a current total amount of game coins within the operating area for a specified game participant during a current game phase, and the historical detection result includes a historical total amount of game coins within the operating area for the specified game participant during a predetermined game phase. In a case that the current total amount of game coins exceeds the historical total amount of game coins, it can be determined that the current game prop and the historical game prop meet the second alert condition. In a case that the current total amount of game coins does not exceed the historical total amount of game coins, it can be determined that the current game prop and the historical game prop do not meet the second alert condition.

[0087] In the present embodiment, it is possible to determine whether the current total amount of game coins of each game participant exceeds the historical total amount of game coins corresponding to the game participant, or only for a part of game participants, to determine whether the current total amount of game coins of each of the game participants exceeds the historical total amount of game coins corresponding to the game participant.

The part of game participants may be, such as, a game participant who has performed an operation on the first game prop during the current game phase, or a game participant who holds a total amount of game coins meeting a certain condition, etc. An identity (ID) can be assigned to each game participant for uniquely identifying the game participant. For game participant a , a historical total amount of game coins of the game participant a can be associated stored with the ID of the game participant a in a cache. And then the current total amount of game coins obtained based on the first detection result can be compared with a historical total amount of game coins read from the cache to determine whether the second alert condition is satisfied.

[0088] In the embodiments of the present disclosure, as the above-mentioned various operational errors can be identified based on the game image without manual participation, it has relatively high detection efficiency and relatively low detection cost.

[0089] Those skilled in the art can understand that in the above manners of specific implementation, the writing order of each step does not mean a strict execution order but constitutes any limitation on the implementation process. The specific execution order of each step should be determined by its function and possible internal logic.

[0090] As shown in FIG. 3, the embodiments of the present disclosure also provides a system for processing a game image, the system includes: an image acquiring unit 301, set around a game area for capturing the game area to obtain a game image, the game area includes an operating area for operating a game prop and a preset marker; and a processing unit 302 which is connected to the image acquiring unit through communication, configured to: acquire a first detection result of a game prop within the operating area and a second detection result of a preset marker within the operating area by performing a detection based on the game image; determine, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition; and generate an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

[0091] In the embodiments of the present disclosure, the image acquiring unit 301 may be a camera or a pick-up head, and the image acquiring unit 301 can be set around the game area S . The game area S can be an area on a table, as shown in the gray area in FIG. 3, the game area S can be used for one or more players P to play games. One or more image acquiring units 301 can be set around the game area S . Different types of game areas S can

be used in different game scenarios, and different types of game areas S can have different sizes, shapes and layouts.

[0092] The number and location of the image acquiring unit 301 can be determined based on the type of the game area S . For example, in a case that the game area S is a rectangular area, a plurality of image acquiring units 301 can be set along the longer side of the rectangular area. For another example, in a case that the game area S is a circular area, a plurality of image acquiring units 301 can be set surround the game area S . In addition, one or more image acquiring units 301 can be set above the game area S respectively for acquiring top view images of the game area S ; and one or more image acquiring units 301 can be set on the side of the game area S for acquiring side view images of the game area S .

[0093] Each image acquiring unit 301 can acquire image data I of the game area S . The image data I can indicate an individual image or a set of image sequences (e.g., video). Each image acquiring unit 301 can communicate with the processing unit 302 in a wired or wireless way, thereby sending the acquired image data I to the processing unit 302 separately. The processing unit 302 can obtain a complete image of the entire game area S by correlated processing the image data I acquired by each image acquiring unit 301. Then, various detection results of the game area S are obtained from one or more images acquired by the image acquiring units 301, thereby automatically detecting wrong game operations. As the above process does not involve any manual operations, it has relatively high detection efficiency and relatively low detection cost.

[0094] In the embodiments of the present disclosure, the processing unit 302 can be used to execute the method of processing a game image described in any one of the above embodiments. Specific details are detailed in the previously mentioned method implementations and will not be repeated here.

[0095] As shown in FIG. 4, an apparatus for processing a game image is further provided by the present disclosure. The apparatus includes an obtaining module, configured to obtain a game image 401 captured for a game area, the game area includes an operating area for operating a game prop and a preset marker; a first acquiring module 402, configured to acquire a first detection result of a game prop within the operating area by performing a detection based on the game image; a second acquiring module 403, configured to acquire a second detection result of a preset marker within the operating area by performing a detection based on the game image; a determining module 404, configured to determine, based on the first detection result and the second detection result, whether the game prop

and the preset marker within the operating area meet a preset first alert condition; and an alert module 405, configured to generate an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

[0096] In some embodiments, the determining module is configured to determine, based on the first detection result and the second detection result, whether the preset marker meets a marker normal condition corresponding to the game prop; and determine, in a case that the preset marker does not meet the marker normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0097] In some embodiments, the determining module is configured to determine, based on the first detection result and the second detection result, whether the game prop meets a prop normal condition corresponding to the preset marker; and determine, in a case that the game prop does not meet the prop normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0098] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; the first detection result includes the number of the first game prop within the first operating area and the second detection result includes the number of the preset marker within the third operating area; and the determining module is configured to determine, in a case that the number of the first game prop is lower than a predetermined threshold and the number of the preset marker is greater than 0, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0099] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; the first game prop includes a card, the first detection result includes card face information of a card within the first operating area; and the second detection result includes a type of the preset marker within the third operating area; and the determining module is configured to: determine, a type of a corresponding reference marker based on the card face information of the card; and determine, in a case that the type of the reference marker is inconsistent with the type of the preset marker, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0100] In some embodiments, the operating area includes a first operating area and a third operating area, where the first operating area is an operating area for a first game prop and the third operating area is an operating area for the preset marker; and the first game prop includes a card, the first detection result includes card face information of a card within the first operating area, and the second detection result includes a number of the preset marker within the third operating area; and the determining module is configured to: determine, a reference number of a corresponding marker based on the card face information of the card; and determine, in a case that the reference number is inconsistent with the number of the preset marker, that the preset marker does not meet the marker normal condition corresponding to the game prop.

[0101] In some embodiments, the operating area further includes a second operating area which is an operating area for a second game prop. Accordingly, in a case of determining that the preset marker meets the marker normal condition corresponding to the first game prop and the number of the preset marker within the third operating area is not 0, the determining module is further configured to: determine, based on the first detection result and the second detection result, whether the second game prop meets the prop normal condition corresponding to the preset marker; and determine, in a case that the second game prop does not meet the prop normal condition, that the game prop and the preset marker within the operating area meet the first alert condition.

[0102] In some embodiments, the second game prop includes game coins, the first detection result further includes a total amount of game coins within the second operating area, and the prop normal condition corresponding to the preset marker includes an amount range of game coins; and the determining module is configured to: determine, in a case that the total amount of game coins within the second operating area is out of the amount range of game coins, that the second game prop does not meet the prop normal condition corresponding to the preset marker. The amount range of game coins is determined based on at least one of: a type of the preset marker within the third operating area; or a denomination of the game coins within the second operating area during a preset game phase.

[0103] In some embodiments, the operating area includes a second operating area and a third operating area, where the second operating area is an operating area for a second game prop and the third operating area is an operating area for the preset marker; the third operating area including two or more marker operating sub-areas and each marker operating sub-area corresponding to a game character; the second operating area including two or

more prop operating sub-areas and each prop operating sub-area corresponding to a game character; the game character corresponding to the prop operating sub-area corresponds to the game character corresponding to the marker operating sub-area in a one-to-one correspondence; the first detection result includes a prop operating sub-area where the second game prop is located in the second operating area; and the second detection result includes a marker operating sub-area where the preset marker is located in the third operating area. Accordingly, determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet the first alert condition further includes: determining, in a case that the marker operating sub-area where the preset marker is located in the third operating area and the prop operating sub-area where the second game prop is located in the second operating area correspond to different game characters, that the game prop and the preset marker within the operating area meet the first alert condition.

[0104] In some embodiments, the apparatus further includes: a second alert condition determining module, configured to determine, based on the first detection result and a historical detection result of the game prop, whether a current game prop within the operating area and a historical game prop within the operating area meet a preset second alter condition; and the alert module is configured to: generate an alert message in a case that the current game prop and the historical game prop meet the second alter condition.

[0105] In some embodiments, the game prop includes game coins, the first detection result includes a current total amount of game coins within the operating area for a specified game participant during a current game phase, the historical detection result includes a historical total amount of game coins within the operating area for the specified game participant during a preset game phase; and the second alert condition determining module, configured to determine, in a case that the current total amount of game coins exceeds the historical total amount of game coins, the current game prop within the operating area and the historical game prop within the operating area meet the preset second alter condition.

[0106] In some embodiments, the apparatus provided by embodiments of the present disclosure has functionality or contains modules that can be used to perform the methods described in the method embodiments above, the specific implementation of which can be described with reference to the method embodiments above and will not be repeated herein for brevity.

[0107] The embodiments of this specification also provide a computer device, which includes at least a memory, a processor, and a computer program stored on the memory and executable on the processor, when the computer program is executed by a processor, the method according to any of the above embodiments can be implemented.

[0108] FIG. 5 shows a more specific hardware structure diagram of a computing device provided by an embodiment of the present description, and the device may include a processor 501, a memory 502, an input/output interface 503, a communication interface 504, and a bus 505. The processor 501, the memory 502, the input/output interface 503, and the communication interface 504 implement a communication connection between each other inside the device through the bus 505.

[0109] The processor 501 may be implemented by using a common central processing unit (CPU), a microprocessor, an Application specific integrated circuit (ASIC), or one or more integrated circuits, etc. , for executing relevant programs to implement the technical solutions provided by the embodiments of the present description. The processor 501 may also include a graphics card, and the graphics card may be an Nvidia titan X graphics card or a 1080Ti graphics card.

[0110] The memory 502 may be implemented in the form of a read only memory (ROM), a random access memory (RAM), a static storage device, a dynamic storage device, and the like. The memory 502 may store an operating system and other application programs. When the technical solutions provided in the embodiments of the present specification are implemented through software or firmware, related program codes are stored in the memory 502 and are invoked and executed by the processor 501.

[0111] The input/output interface 503 is used to connect an input/output module to realize information input and output. The input/output/module can be configured in the device as a component (not shown in the figure), or it can be connected to the device to provide corresponding functions. The input device may include a keyboard, a mouse, a touch screen, a microphone, various sensors, etc., and an output device may include a display, a speaker, a vibrator, an indicator light, and the like.

[0112] The communication interface 504 is used to connect a communication module (not shown in the figure) to implement communication interaction between the device and other devices. The communication module can realize communication through wired means (such as USB, network cable, etc.), or through wireless means (such as mobile network, WIFI, Bluetooth, etc.).

[0113] The bus 505 includes a path to transmit information between various components of the device (for example, the processor 501, the memory 502, the input/output interface 503, and the communication interface 504).

[0114] It should be noted that although the above device only shows the processor 501, the memory 502, the input/output interface 503, the communication interface 504, and the bus 505, in the specific implementation process, the device may also include other necessary components for normal operation. In addition, those skilled in the art can understand that the above-mentioned device may also include only the components necessary to implement the solutions of the embodiments of the present specification, and not necessarily include all the components shown in the figures.

[0115] Embodiments of the present disclosure further provides a computer readable storage medium having a computer program stored thereon, where the program is executed by a processor to perform steps in the method according to any of the embodiments as described above.

[0116] The computer readable medium includes permanent and non-permanent, removable and non-removable medium, and information storage can be realized by any method or technology. The information can be computer readable instructions, data structures, program modules, or other data. Examples of computer storage media include, but are not limited to, phase change memory (PRAM), static random access memory (SRAM), dynamic random access memory (DRAM), other types of random access memory (RAM), read-only memory (ROM), electrically erasable programmable read-only memory (EEPROM), flash memory or other memory technology, CD-ROM, digital versatile disc (DVD) or other optical storage, magnetic cassettes, magnetic tape storage or other magnetic storage devices or any other non-transmission media can be used to store information that can be accessed by computing devices. According to the definition in this article, the computer readable medium does not include transitory medium, such as modulated data signals and carrier waves.

[0117] From the description of the above implementation manners, it can be known that those skilled in the art can clearly understand that the embodiments of this specification can be implemented by means of software plus a necessary general hardware platform. Based on such understanding, the technical solutions of the embodiments of the present description essentially or the part contributing to the prior art may be embodied in the form of a software product. The computer software product may be stored in a storage medium. For example,

a ROM/RAM, a magnetic disk, an optical disk, and the like include several instructions for enabling a computer device (which may be a personal computer. The server, or the network device, etc.) executes the method described in each embodiment or some part of the embodiment of the present description.

[0118] The systems, apparatuses, modules, or units explained in the above embodiments may be implemented by computer chips or entities, or implemented by products with certain functions. A typical implementation apparatus is a computer, and a specific form of the computer may be a personal computer, a laptop computer, a cellular phone, a camera phone, a smart phone, a personal digital assistant, a media player, a navigation device, an e-mail transceiver device, a game console, a tablet computer, a wearable device, or a combination of any of these devices.

[0119] Various embodiments in the present description are described in a progressive manner, and parts similar to each other may be referred to for each other, and the description of each embodiment is different from the other embodiments. Especially, for apparatus embodiments, since the apparatuses are basically similar to method embodiments, the description is simplified, and reference may be made to some of the description of the method embodiment. The apparatus embodiments described above are merely schematic, in which the modules described as separate components may or may not be physically separated, and the functions of the modules may be implemented in one or more software and/or hardware when the embodiments of the present description are implemented. Part or all of the modules may be selected according to actual requirements to implement the objectives of the solutions in the embodiments. Those of ordinary skill in the art can understand and implement without creative work.

[0120] The above are only specific implementations of the embodiments of this specification. It should be pointed out that for those of ordinary skill in the art, without departing from the principle of the embodiments of this specification, several improvements and embellishments can be made, these improvements and embellishments should also be regarded as the protection scope of the embodiments of this specification.

CLAIMS

1. A method of processing a game image, comprising:

obtaining a game image captured for a game area, the game area comprises an operating area for operating a game prop and a preset marker;

acquiring a first detection result of a game prop within the operating area and a second detection result of a preset marker within the operating area by performing a detection based on the game image;

determining, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition; and

generating an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

2. The method according to claim 1, wherein, the game prop and the preset marker within the operating area meet the first alert condition comprises at least one of:

the preset marker does not meet a marker normal condition corresponding to the game prop;

the game prop does not meet a prop normal condition corresponding to the game marker.

3. The method according to claim 2, wherein,

the operating area comprises:

a first operating area, being an operating area for a first game prop, and

a third operating area, being an operating area for the preset marker;

the first detection result comprises a number of the first game prop within the first operating area, and

the second detection result comprises a number of the preset marker within the third operating area; and

the preset marker does not meet the marker normal condition corresponding to the game prop comprises:

the number of the first game prop is lower than a predetermined threshold and the number of the preset marker is greater than 0.

4. The method according to claim 2, wherein,

the operating area comprises:

a first operating area, being an operating area for a first game prop, and

a third operating area, being an operating area for the preset marker;

the first game prop comprises a card,

the first detection result comprises card face information of a card within the first operating area, and

the second detection result comprises a type of the preset marker within the third operating area; and

the preset marker does not meet the marker normal condition corresponding to the game prop comprises:

a type of a reference marker determined based on the card face information of the card is inconsistent with the type of the preset marker.

5. The method according to claim 2, wherein,

the operating area comprises:

a first operating area, being an operating area for a first game prop, and

a third operating area, being an operating area for the preset marker;

the first game prop comprises a card,

the first detection result comprises card face information of a card within the first operating area, and

the second detection result comprises a number of the preset marker within the third operating area; and

the preset marker does not meet the marker normal condition corresponding to the game prop comprises:

a reference number of a marker determined based on the card face information of the card is inconsistent with the number of the preset marker.

6. The method according to any one of claims 3 to 5, wherein,

the operating area further comprises a second operating area which is an operating area for a second game prop, and

in a case of determining that the preset marker meets the marker normal condition corresponding to the first game prop and a number of the preset marker within the third

operating area is not zero, the game prop and the preset marker within the operating area meet the first alert condition further comprises:

the second game prop does not meet the prop normal condition corresponding to the game marker.

7. The method according to claim 6, wherein,

the second game prop comprises game coins,

the first detection result further comprises a total amount of game coins within the second operating area, and

the prop normal condition corresponding to the preset marker comprises an amount range of game coins; and

the second game prop does not meet the prop normal condition corresponding to the preset marker comprises:

the total amount of game coins within the second operating area is out of the amount range of game coins;

wherein, the amount range of game coins is determined based on at least one of:

a type of the preset marker within the third operating area; or

a denomination of the game coins within the second operating area during a preset game phase.

8. The method according to claim 2, wherein,

the operating area comprises:

a second operating area, being an operating area for a second game prop, and

a third operating area, being an operating area for the preset marker;

the third operating area comprises two or more marker operating sub-areas and each marker operating sub-area corresponds to a game character;

the second operating area comprises two or more prop operating sub-areas and each prop operating sub-area corresponds to a game character;

the game character corresponding to the prop operating sub-area corresponds to the game character corresponding to the marker operating sub-area in a one-to-one correspondence;

the first detection result comprises a prop operating sub-area where the second game prop is located in the second operating area, and

the second detection result comprises a marker operating sub-area where the preset marker is located in the third operating area; and

the game prop and the preset marker within the operating area meet the first alert condition further comprises:

the marker operating sub-area where the preset marker locates in the third operating area and the prop operating sub-area where the second game prop is located in the second operating area correspond to different game characters.

9. The method according to claim 1, further comprises:

determining, based on the first detection result and a historical detection result of the game prop, whether a current game prop within the operating area and a historical game prop within the operating area meet a preset second alter condition; and

generating an alert message in a case that the current game prop within the operating area and the historical game prop within the operating area meet the second alter condition.

10. The method according to claim 9, wherein,

the game prop comprises game coins,

the first detection result comprises a current total amount of game coins within the operating area for a specified game participant during a current game phase, and

the historical detection result comprises a historical total amount of game coins within the operating area for the specified game participant during a preset game phase; and

the current game prop within the operating area and the historical game prop within the operating area meet the second alter condition, comprises:

the current total amount of game coins exceeds the historical total amount of game coins.

11. An apparatus for processing a game image, comprising:

an obtaining module, configured to obtain a game image captured for a game area, the game area comprises an operating area for operating a game prop and a preset marker;

a first acquiring module, configured to acquire a first detection result of a game prop within the operating area by performing a detection based on the game image;

a second acquiring module, configured to acquire a second detection result of a preset marker within the operating area by performing a detection based on the game image;

a determining module, configured to determine, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition;

an alert module, configured to generate an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

12. A system of processing a game image, comprising:

an image acquiring unit, set around a game area for capturing the game area to obtain a game image, the game area comprises an operating area for operating a game prop and a preset marker;

a processing unit which is to communicate with the image acquiring unit, configured to:

acquire a first detection result of a game prop within the operating area and a second detection result of a preset marker within the operating area by performing a detection based on the game image;

determine, based on the first detection result and the second detection result, whether the game prop and the preset marker within the operating area meet a preset first alert condition; and

generate an alert message in a case that the game prop and the preset marker within the operating area meet the first alert condition.

13. A computer readable storage medium, having a computer program stored thereon, wherein when the computer program is executed by a processor, the method according to any one of claims 1 to 10 is implemented.

14. A computer device, comprising a memory, a processor, and a computer program stored on the memory and executable on the processor; wherein when the computer program is executed by the processor, the method according to any one of claims 1 to 10 is implemented.