CLAIMS

1. A method of detecting a game prop operation event, comprising:

obtaining a first video frame of a game area;

obtaining a target detection result by detecting information of one or more game props in the first video frame;

determining an operation sequence identifier of each of the one or more game props in the first video frame according to a comparison of the target detection result and a historical detection result, wherein the operation sequence identifier is used to indicate an order of operating the game prop by an operating member, and the historical detection result is determined based on information of one or more game props in a second video frame collected before the first video frame;

determining whether there is an abnormal game prop operation event occurring in the game area according to a matching result of the determined operation sequence identifier of the game prop and position information of the game prop, wherein the position information is used to indicate a position of the game prop in the game area,

wherein obtaining the first video frame of the game area comprises:

obtaining an original video frame of the game area;

in response to detecting that a coverage ratio of the operating member to the game prop in the original video frame is smaller than a preset threshold and a position of the game prop in the original video frame is consistent with a position of the game prop in N frames previous to the original video frame, determining the original video frame as the first video frame, wherein N is a positive integer.

2. The method according to claim 1, wherein the information of the game prop comprises at least one of the position information of the game prop or identification information displayed on an identification face of the game prop.

3. The method according to claim 1 or 2, further comprising:

storing the operation sequence identifier of the game prop and the information of the game prop in an associated manner.

~~4. The method according to any one of claims 1 to 3, wherein obtaining the first video frame of the game area comprises:~~

~~obtaining an original video frame of the game area;~~

~~in response to detecting that a coverage ratio of the operating member to the game prop in the original video frame is smaller than a preset threshold and a position of the game prop in the original video frame is consistent with a position of the game prop in N frames previous to the original video frame, determining the original video frame as the first video frame, wherein N is a positive integer.~~

~~5~~4. The method according to any one of claims 1 to ~~4~~3, wherein obtaining the first video frame of the game area comprises:

in response to that a state of a game in the game area is a game prop operation state, obtaining the first video frame of the game area.

~~6~~5. The method according to claim ~~4~~1, wherein the coverage ratio of the operating member to the game prop is determined by:

determining a first detection box corresponding to the game prop in the original video frame;

determining a second detection box corresponding to the operating member in the original video frame; and

determining the coverage ratio of the operating member to the game prop according to a coverage ratio of the second detection box to the first detection box.

~~7~~6. The method according to any one of claims 1 to ~~6~~5, wherein determining whether there is an abnormal game prop operation event occurring in the game area according to the matching result of the determined operation sequence identifier of the game prop and the position information of the game prop comprises:

in response to determining that the operation sequence identifier of the game prop and the position information of the game prop are matched, determining that there is no abnormal game prop operation event occurring in the game area.

~~8~~7. The method according to claim ~~7~~6, wherein the game area comprises a first sub-area and a second sub-area in which the one or more game props are placed;

in response to determining that the operation sequence identifier of the game prop and the position information of the game prop are matched, determining that there is no abnormal game prop operation event occurring in the game area comprises:

determining that there is no abnormal game prop operation event occurring in the game area under condition of detecting that a matching result of the operation sequence identifier and the position information of the game prop satisfies the following:

the operation sequence identifier indicates that the game prop is a first game prop or a third game prop operated by the operating member, and the position information indicates that the game prop is located in the first sub-area; or

the operation sequence identifier indicates that the game prop is a second game prop or a fourth game prop operated by the operating member, and the position information indicates that the game prop is located in the second sub-area; or

the operation sequence identifier indicates that the game prop is a fifth or sixth game prop operated by the operating member, and the position information indicates that the game prop is located in a target sub-area, wherein the target sub-area is determined based on identification information displayed on identification faces of the first to fourth game props operated by the operating member, and the target sub-area is the first sub-area or the second sub-area.

~~9~~8. The method according to any one of claims 1 to ~~8~~7, wherein in response to determining that there is an abnormal game prop operation event occurring in the game area according to the matching result of the operation sequence identifier of the game prop and the position information of the game prop, sending abnormality prompt information.

~~10~~9. The method according to any one of claims 1 to ~~9~~8, further comprising:

in response to detecting that a number of game props in the game area is not matched with a number of game props in the game area at the time of determining a game processing result, sending abnormality prompt information.

~~11~~10. The method according to any one of claims 1 to ~~10~~9, wherein a game in the game area comprises a card game and the game prop comprises a card.

~~12~~11. An apparatus for detecting a game prop operation event, comprising:

an obtaining module configured to obtain a first video frame of a game area;

a detecting module configured to obtain a target detection result by detecting information of one or more game props in the first video frame;

an operation sequence identifier determining module configured to determine an operation sequence identifier of each of the one or more game props in the first video frame according to a comparison of the target detection result and a historical detection result, wherein the operation sequence identifier is used to indicate an order of operating the game prop by an operating member, and the historical detection result is determined based on information of one or more game props in a second video frame collected before the first video frame;

an abnormality determining module configured to determine whether there is an abnormal game prop operation event occurring in the game area according to a matching result of the determined operation sequence identifier of the game prop and position information of the game prop, wherein the position information is used to indicate a position of the game prop in the game area,

wherein when obtaining the first video frame of the game area, the obtaining module is specifically configured to:

obtain an original video frame of the game area;

in response to detecting that a coverage ratio of the operating member to the game prop in the original video frame is smaller than a preset threshold and a position of the game prop in the original video frame is consistent with a position of the game prop in N frames previous to the original video frame, determine the original video frame as the first video frame, wherein N is a positive integer.

~~13~~12. The detection apparatus according to claim ~~12~~11, wherein the information of the game prop comprises at least one of the position information of the game prop or identification information displayed on an identification face of the game prop.

~~14~~13. The detection apparatus according to claim ~~12~~ 11 or ~~13~~12, wherein the detection apparatus is further configured to store the operation sequence identifier of the game prop and the information of the game prop in an associated manner.

~~15. The detection apparatus according to any one of claims 12 to 14, wherein when obtaining the first video frame of the game area, the obtaining module is specifically configured to:~~

~~obtain an original video frame of the game area;~~

~~in response to detecting that a coverage ratio of the operating member to the game prop in the original video frame is smaller than a preset threshold and a position of the game prop in the original video frame is consistent with a position of the game prop in N frames previous to the original video frame, determine the original video frame as the first video frame, wherein N is a positive integer.~~

~~16~~14. The detection apparatus according to any one of claims ~~12~~ 11 to ~~15~~13, wherein when determining whether there is an abnormal game prop operation event occurring in the game area according to the matching result of the determined operation sequence identifier of the game prop and the position information of the game prop, the abnormality determining module is specifically configured to:

in response to determining that the operation sequence identifier of the game prop and the position information of the game prop are matched, determine that there is no abnormal game prop operation event occurring in the game area.

~~17~~15. The detection apparatus according to claim ~~16~~14, wherein the game area comprises a first sub-area and a second sub-area in which the one or more game props are placed;

the abnormality determining module is specifically configured to: determine that there is no abnormal game prop operation event occurring in the game area under condition of detecting that a matching result of the operation sequence identifier and the position information of the game prop satisfies the following:

the operation sequence identifier indicates that the game prop is a first game prop or a third game prop operated by the operating member, and the position information indicates that the game prop is located in the first sub-area; or

the operation sequence identifier indicates that the game prop is a second game prop or a fourth game prop operated by the operating member, and the position information indicates that the game prop is located in the second sub-area; or

the operation sequence identifier indicates that the game prop is a fifth or sixth game prop operated by the operating member, and the position information indicates that the game prop is located in a target sub-area, wherein the target sub-area is determined based on identification information displayed on identification faces of the first to fourth game props operated by the operating member, and the target sub-area is the first sub-area or the second sub-area.

~~18~~16. An electronic device, comprising a processor, a memory, and a computer program stored in the memory and executable by the processor, wherein the computer program is

executed by the processor to implement the method according to any one of claims 1 to ~~11~~10.

~~19~~17. A computer readable storage medium, storing computer readable instructions thereon, wherein the instructions are executed by a computer to implement the method according to any one of claims 1 to ~~11~~10.

~~20~~18. A detection system, comprising an image collection apparatus, a service system and a user interaction apparatus;

wherein the image collection apparatus is configured to collect a video of a game area and send the video to the service system;

the service system is configured to:

obtain a first video frame from the video;

obtain a target detection result by detecting information of one or more game props in the first video frame;

determine an operation sequence identifier of each of the one or more game props in the first video frame according to a comparison of the target detection result and a historical detection result, wherein the operation sequence identifier is used to indicate an order of operating the game prop by an operating member, and the historical detection result is determined based on information of one or more game props in a second video frame collected before the first video frame;

determine whether there is an abnormal game prop operation event occurring in the game area according to a matching result of the determined operation sequence identifier of the game prop and position information of the game prop, wherein the position information is used to indicate a position of the game prop in the game area; and

notify the user interaction apparatus in response to determining that there is an abnormal game prop operation event;,

wherein when obtaining the first video frame from the video, the service system is specifically configured to:

obtain an original video frame of the game area;

in response to detecting that a coverage ratio of the operating member to the game prop in the original video frame is smaller than a preset threshold and a position of the game prop in the original video frame is consistent with a position of the game prop in N frames previous to the original video frame, determine the original video frame as the first video frame, wherein N is a positive integer;

the user interaction apparatus is configured to send abnormality prompt information to prompt a user.