wireless IC (RFID) tag to each chip to recognize the amount of the chip.

[0005]

In a card game monitoring system disclosed in WO 2015/107902 A, fraud monitoring is performed by determining through image analysis of movement of chips whether or not the chips placed on a gaming table are collected or redeemed in accordance with a win or lose result.

SUMMARY

[0006]

Embodiments of the invention seek to provide a new system for detecting fraud in a game in a casino or an error or fraud at the time of wagering chips or doing settlement.

[0007]

An aspect of the present invention provides a system for a gaming table, the system comprising a camera that is configured to detect a game performed on the gaming table to obtain an image; and at least one processor, wherein the at least one processor is configured to determine an outcome of the game; based on the image obtained by the camera, recognize positions, types, and numbers of chips wagered, on the gaming table for the game, by a player or in connection with a player position; and based on the recognized positions, types, and numbers of the chips and the determined outcome of the game, store a winning and losing history of the player or the player position.

[0007a]

There is also disclosed a fraud detection system in a casino having a plurality of gaming tables, including: a game recording apparatus which records a progress of a game played in the gaming table as an image; an image analyzing apparatus

which performs image analysis on the image of the recorded progress of the game; a win/lose result determining apparatus which determines a win or lose result of each game in the gaming table; and a control device which detects fraud practiced in the gaming table by using a result of the image analysis by the image analyzing apparatus and the win or lose result determined by the win/lose result determining apparatus,

determining apparatus may be a card distribution device which distributes the cards in the gaming table or a control device which determines the win or lose result of each game from information of the image analyzing apparatus reading the cards distributed in the gaming table by using a camera.

[0021]

As disclosed, it is possible to detect fraud in collection and redemption of chips in accordance with a win or lose result of a game.

[0022]

In addition, as disclosed, although the cards are slanted by "card squeegee" frequently performed by players in a baccarat game or the like, the rank and suit of the cards can be determined by image analysis, so that the total amount of chips being overlapped or being in a blind spot together with the positions can be recognized. In addition, fraud at the time of exchanging cash and chips can be detected.

BRIEF DESCRIPTION OF DRAWINGS

[0023]

FIG. 1 is a diagram illustrating an overview of a fraud detection system in a casino having a plurality of gaming tables according to a first embodiment of the invention;

FIG. 2A is a perspective diagram of chips illustrating an example of different overlapped states of chips recognized in the first embodiment of the invention;

Claims:

1. A system for a gaming table, the system comprising:

a camera that is configured to detect a game performed on the gaming table to obtain an image; and

at least one processor, wherein the at least one processor is configured to:

determine an outcome of the game;

based on the image obtained by the camera, recognize positions, types, and numbers of chips wagered, on the gaming table for the game, by a player or in connection with a player position; and

based on the recognized positions, types, and numbers of the chips and the determined outcome of the game, store a winning and losing history of the player or the player position.

2. The system according to claim 01, wherein the at least one processor is configured to determine the outcome based on cards dealt from a card distributor.

3. The system according to claim 01, wherein the at least one processor includes a processor integrated in a card distributor, and the processor integrated in the card distributor is configured to determine the outcome based on cards dealt from the card distributor.

4. The system according to claim 01, wherein the at least one processor includes a processor integrated in a card distributor, and the processor integrated in the card distributor is configured to determine the outcome.

5. The system according to claim 01, wherein the at least one processor is configured to recognize an amount of all of the chips wagered by the player or in connection with the player position.

6. The system according to claim 01, wherein the at least one processor is configured to identify the player by extracting a face image of the player and identifying a corresponding identification (ID) number.

7. The system according to claim 01, wherein the at least one processor is configured to recognize the obtained amounts of the chips by recognizing types and numbers of chips to be paid for winning chips wagered by the player or in connection with the player position.

8. The system according to claim 01, wherein the at least one processor is configured to perform image recognition using a learning function or an artificial intelligence function for the recognition of the positions, types, and numbers of the chips wagered even in a situation where a part of the chips placed on the gaming table is concealed due to a blind spot of the camera.

9. The system according to claim 01, wherein the at least one processor is configured to:

based on the positions, types, and number of the chips wagered by the player or in connection with the player position and the determined outcome, calculate a collecting amount of chips corresponding to losing chips of the chips wagered by the player or in connection with the player position and a payment amount of chips corresponding to winning chips of the chips wagered by the player or in connection with the player position; and

determine whether an amount of the chips stored in a dealer chip tray of the gaming table, after settlement of the game, increases or decreases according to the calculated collected amount and the calculated payment amount.

10. The system according to claim 01, wherein:

the at least one processor is configured to extract an unusual situation; and

the extraction one of:

is based on the obtained amounts of chips;

is based on an amount of the chips wagered by the player or in connection with the player position and the outcome of the game; and

is performed respectively for each of a plurality of playing positions based on a relationship between an amount of chips wagered when losing at the respective playing position and an amount of chips wagered when winning at the respective playing position.

11. The system according to claim 10, wherein the at least one processor is configured to extract the unusual situation based on the obtained amounts of chips.

12. The system according to claim 10, wherein the at least one processor is configured to extract the unusual situation based on the amount of the chips wagered by the player or in connection with the player position and the outcome of the game.

13. The system according to claim 10, wherein the at least one processor is configured

to perform the extraction respectively for each of the plurality of playing positions based on the relationship between the amount of chips wagered when losing at the respective playing position and the amount of chips wagered when winning at the respective playing position.

14. The system according to claim 10, wherein the at least one processor is configured to identify a player for which the unusual situation is extracted.

15. The system according to claim 10, wherein the at least one processor is configured to output a warning notifying of a presence of a player for which the unusual situation has been extracted.

16. The system according to claim 10, wherein the at least one processor is configured to extract the unusual situation by comparing the outcome with statistical data.

17. The system according to claim 0~~1~~, wherein the at least one processor is configured to identify whether above a predefined threshold amount has been won by the player or in connection with the player position.

18. The system according to claim 0~~1~~, wherein the at least one processor is configured to determine whether the winning and losing history of the player or the player position satisfies a predefined condition.

19. The system according to claim 18, wherein the at least one processor is configured to identify the player or the player position for which the predefined condition is satisfied.

20. The system according to claim 1, wherein the at least one processor is configured to, based on the recognized positions, types, and numbers of the chips and the determined outcome of the game, store a history of amounts of chips obtained by the player or in connection with the player position.

21. The system according to claim 20, wherein the at least one processor is configured to determine whether the history of amounts of chips obtained by the player or in connection with the player position satisfies a predefined condition.

22. The system according to claim 21, wherein the at least one processor is configured to identify the player or the player position for which the predefined condition is satisfied.