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]

The present disclosure seeks 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.

[0006a]

According to an aspect of the present invention, there is provided a gaming chip recognition system for a casino, the gaming chip recognition system comprising a camera configured to capture an image of a table from diagonally above to capture a plurality of gaming chip stacks placed on the table, each of the plurality of gaming chip stacks having a different distance from the camera, whereby the plurality of gaming chip stacks appear in the image of different sizes; and at least one processor configured to: perform an image analysis of the image using an artificial intelligence technology or deep learning technology to recognize each gaming chip in each of the plurality of gaming chip stacks appearing in the image; and determine a respective number of gaming chips for each of the recognized gaming chip stacks.

[0007]

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, wherein the control device recognizes a position, type, and number of the chips wagered by each player through

may have at least one of functions of determining as to:

1) whether or not there is movement of chips during the time interval from the start of extraction of cards or from the game start operation of the dealer before the win or lose result of the game is displayed by the card distribution device in each game;

2) whether or not there is movement of chips by a person other than the dealer during the time interval when the dealer collects chips wagered by the losers among the game participants after the end of each game;

3) whether or not a chip is added during the time interval when the dealer collects chips wagered by the losers among the game participants after the end of each game;

4) whether or not the dealer performs payment for a position of chips wagered by the winner among the game participants after the end of each game; and

5) whether or not the winner among the game participants receives wagered chips and paid chips after the end of each game.

[0020]

In the above fraud detection system, the win/lose result 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]

According to the fraud detection system of the present disclosure,

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, according to the system of the present disclosure, 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;

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

FIG. 3A is a diagram illustrating details of a chip tray in the first embodiment of the invention;

FIG. 3B is a diagram illustrating another example of a chip tray in the first embodiment of the invention;