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]

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, there is provided a system for recognizing chips placed on a game table on which a game using chips is played, the system comprising: a single camera configured to capture an image of a chip stack comprising, in use, a plurality of chips stacked vertically and overlapped in a deviated manner and placed on the game table, to acquire one captured image; a control device configured to determine the position, type, and number of chips placed on the game table by analyzing the one captured image acquired by the single camera, characterized in that the single camera is configured to acquire the one captured image including,

in use, when there are a plurality of chip stacks, the plurality of chip stacks having different distances from each other and different directions of observation from the camera, by capturing the image of the chips placed on the game table from diagonally above, the single camera is configured to acquire the one captured image, which shows, in use, the top surface of the topmost chip in the chip stack and the sides of the plurality of chips comprising the chip stack, by capturing the image of the chips placed on the game table from diagonally above, the control device is configured to determine the location of each of the plurality of chip stacks, the type of each of the plurality of chips in each of the plurality of chip stacks, and the number of chips in each of the plurality of chip stacks by using artificial intelligence techniques utilizing deep learning as image analysis, and the control device is configured to determine the position, the type, and the number of chips by image analysis of the one captured image of a chip stack comprising a plurality of chips stacked vertically and overlapped in a deviated manner.

[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,

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;