amount of wagered chips, proposed is a technique of attaching an 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]

An aspect of the present invention provides a management system of one or more table games in a casino having a plurality of gaming tables, wherein each gaming table has a plurality of player positions with a plurality of betting areas assigned to each, and for each player position the plurality of betting areas are perpendicular to a direction in which the plurality of player positions line up, the management system comprising:

a camera configured to capture an image of a gaming table of the plurality of gaming tables by shooting chips wagered on any of the plurality of betting areas from diagonally above; and

a control device;

wherein:

the management system is configured to identify respective players playing at the player positions; and

the control device is configured to:

process the image using artificial intelligence technology or a neural network based image recognition technology to determine one or more positions, one or more types, and one or more numbers of the wagered chips; and

calculate respective amounts of the wagered chips of the identified players respectively.

[0007]

There is 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

CLAIMS

1. A management system of one or more table games in a casino having a plurality of gaming tables, wherein each gaming table has a plurality of player positions with a plurality of betting areas assigned to each, and for each player position the plurality of betting areas are perpendicular to a direction in which the plurality of player positions line up, the management system comprising:

a camera configured to capture an image of a gaming table of the plurality of gaming tables by shooting chips wagered on any of the plurality of betting areas from diagonally above; and

a control device;

wherein:

the management system is configured to identify respective players playing at the player positions; and

the control device is configured to:

process the image using artificial intelligence technology or a neural network based image recognition technology to determine one or more positions, one or more types, and one or more numbers of the wagered chips; and

calculate respective amounts of the wagered chips of the identified players respectively.

2. The management system according to claim 1, wherein the control device is configured to calculate a respective amount of the wagered chips for each of the player positions, and thereby associates the respective calculated amounts with the respective identified players.

3. The management system according to claim 1, further comprising a data storage, wherein the control device is configured to store a history of the respective amount of the wagered chips of the respective players.

4. The management system according to claim 1, wherein the identification of the respective players is performed by identifying respective identifications (ID) provided to the players.

5. The management system according to claim 1, wherein the control device is further configured to calculate a total amount of the wagered chips of the betting areas.

6. The management system according to claim 5, wherein the control device is configured to calculate the total amount each time a predefined number of the games are over.

7. The management system according to claim 5, further comprising a data storage, wherein the control device is configured to store a history of the total amount of the wagered chips of the betting areas.

8. The management system according to claim 1, wherein the control device is further configured to calculate a total amount of the wagered chips of the betting areas for each of the players respectively, a total amount of winning chips for each of the players respectively, or a total amount of losing chips for each of the players respectively.

9. The management system according to claim 1, wherein the control device is configured to:

for each of the games:

recognize a history of the respective game; and

for each of the players, calculate a respective amount of a change of chips, by increase or decrease, in the respective game based on a respective win or lose result of the respective game; and

for each of the players, recognize a history of win or lose and amounts of income/expenditure of the respective player at each lapse of a predetermined number of the games.

10. The management system according to claim 9, further comprising a game result processor, wherein the game result processor is configured to determine the respective win or lose results of each of the one or more games.

11. The management system according to claim 1, wherein the control device is configured to:

identify an individual one of the players as being in a strange situation in which a respective betting amount, a respective winning amount, and/or a respective win and lose history is strange compared with statistical data; and

output an indication of existence of the identified individual player.

12. The management system according to claim 11, wherein the strange situation is at least one of:

1) a situation in which the respective winning amount is more than a predetermined winning amount;

2) a situation in which a state of a respective betting amount of betting chips at a lose time being small and a respective betting amount of betting chips at a win

time being large continues for several games and the state is aberrant compared with statistical data;

3) a situation in which respective actual winning amounts of the respective players is strange compared with an average wining amount statistically expected based on a history of betting amounts;

4) a situation in which a respective one or more positions of chips wagered by a respective one of the players and a respective amount of chips obtained by the respective player are strange compared with statistical data; or

5) a situation in which a winning rate when the amount of betting is more than a predetermined amount is strange compared with statistical data.

13. The management system according to claim 1, wherein the management system is configured to perform the identification of the respective players playing the play positions from respective face images of the players by using a neural network based image recognition technology.