numbers or the total amount of bet chips, and thus, the amount of chips is recognized.

[0005]

In a card game monitoring system described in WO 2015/107902 A, whether or not chips placed on a gaming table are collected or paid as a win or lose result is determined by performing image analysis with respect to the movement of the chip, and thus, fraud monitoring is performed.

SUMMARY OF INVENTION

PROBLEM TO BE SOLVED BY INVENTION

[0006]

Embodiments of the invention seek to provide a novel system managing a game in a casino.

[0007]

One aspect of the invention provides a game management system for managing a casino game performed in a casino facility, the game management system comprising: a betting detector configured to detect, for a bet of the casino game, a betting target and a betting amount, the casino game played on a game table with one or more betting areas, the one or more betting areas each have different gross profit margins set according to a game rule; a game result determinator configured to determine a game result of the casino game; and a calculator configured to calculate a total amount of the bet amount or a total amount of a profit for each of the one or more betting areas.

[0007a]

There is also disclosed a game management system managing a casino game performed in a plurality of tables in casino facilities, the system including:

an information processing device specifying a betting target on the basis of a position of a gaming token in an image obtained by capturing bet gaming token or by using the ID buried in the gaming token, and specifying a betting amount on the basis of the type and the number of gaming tokens in the image or by using ID buried in the gaming token;

a game result determination device determining a game result of the casino game;

a calculation device calculating a profit of a casino

manager for each table and each game of the plurality of tables, on the basis of the betting target, the betting amount, and the game result; and

a recording apparatus recording the profit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

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;

FIG. 4 is an enlarged diagram illustrating a mark explaining stains of a card recognized in the first embodiment of the invention;

FIG. 5A is a plan diagram illustrating a font side of a marker in the first embodiment of the invention;

FIG. 5B is a plan diagram illustrating a back side of the marker in the first embodiment of the invention;

CLAIMS

1. A game management system for managing a casino game performed in a casino facility, the game management system comprising:

a betting detector configured to detect, for a bet of the casino game, a betting target and a betting amount, the casino game played on a game table with one or more betting areas, the one or more betting areas each have different gross profit margins set according to a game rule;

a game result determinator configured to determine a game result of the casino game; and

a calculator configured to calculate a total amount of the bet amount or a total amount of a profit for each of the one or more betting areas.

2. The game management system according to claim 1, wherein the betting detector includes:

an image capture device configured to capture an image associated with the casino game; and

an information processing device configured to specify the bet based on the image,

wherein the one or more betting areas include a side betting area.

3. The game management system according to claim 1, wherein the calculator is configured to:

perform a function to:

compare a result of an actual win rate and a profit of each player or each dealer in charge of each game table and a numerical value in a probability statistical calculation or a numerical value based on past accumulated data when a predetermined number of games is finished,

determine a difference between them based on the comparison, and

identify a player or a dealer associated with the difference, and

determine whether a cause of the difference in a series of games in which the difference occurred is related to the one or more betting areas.

4. The game management system according to claim 2, wherein the information processing device is configured to specify, based on image recognition using a machine learning model, the bet based on the image.

5. The game management system according to claim 1, wherein the game result determinator includes:

an electronic shoe including:

a containing portion configured to store playing cards,

an extraction mechanism configured to extract the playing cards one by one from the containing portion, and

a detection unit configured to detect contents of the playing cards extracted by the extraction mechanism; and

a determination unit configured to determine a game result of a baccarat game based on the contents of the playing cards detected by the detection unit.

6. The game management system according to claim 1, further comprising:

a dealer amount detector configured to detect a total amount of gaming tokens of a dealer,

wherein the calculator is further configured to calculate the profit based on the detected total amount of gaming tokens.

7. The game management system according to claim 1, further comprising:

a dealer amount detector configured to detect a total amount of gaming tokens of a dealer,

wherein:

at least one game token includes a radio-frequency (RF) tag storing information specifying at least a value of the at least one gaming token, and

the dealer amount detector includes an RF reader configured to read the RF tag.

8. The game management system according to claim 1, wherein:

the betting detector is configured to detect the bet for each game,

the game result determinator is configured to determine the game result for each game, and

the calculator is configured to calculate a profit for each game based on the bet detected for the game and the game result determined for the game.

9. The game management system according to claim 1, further comprising:

a plurality of game tables including the game table, and

wherein the betting detector and the game result determinator are provided to each game table of the plurality of game tables.

10. The game management system according to claim 9, wherein the calculator is further configured to calculate a profit for each of the plurality of game tables.

11. The game management system according to claim 1, further comprising a table generator configured to create a table

indicating the total amount of the bet amount or a profit for each game or each game table of a plurality of game tables.

12. The game management system according to claim 1, wherein the calculator is configured to further calculate an actual profit for each of the one or more betting areas based on the profit and the total amount of the bet amount.

13. The game management system according to claim 1, further comprising an alarm configured to generate an alarm when a profit rate associated with a particular betting area of the one or more betting areas is less than or equal to a predetermined threshold value, the profit rate determined based on, over one or more games, a profit of the particular betting area and the total amount of the bet amount of the particular betting area.

14. The game management system according to claim 1, further comprising an alarm configured to generate an alarm when a profit rate associated with a particular betting area of the one or more betting areas is greater than or equal to a predetermined threshold value, the profit rate determined based on, over one or more games, a profit of the particular betting area and the total amount of the bet amount of the particular betting area.

15. The game management system according to claim 1, wherein the casino game includes baccarat, and wherein the one or more betting areas includes a player area, a banker area, a tie area, or a combination thereof.

16. The game management system according to claim 1, wherein the calculator is configured to calculate the total amount of the bet amount and the total amount of the profit for each of

the one or more betting areas, and wherein the one or more betting areas include multiple betting areas.

17. The game management system according to claim 3, wherein the calculator is configured to perform the function to compare a result of the actual win rate and the profit of each player of each game table and a numerical value in a probability statistical calculation when a predetermined number of games is finished.

18. The game management system according to claim 3, wherein the calculator is configured to perform the function to compare a result of the actual win rate and the profit of each player of each game table and a numerical value based on past accumulated data when a predetermined number of games is finished.

19. The game management system according to claim 3, wherein the calculator is configured to perform the function to compare a result of the actual win rate and the profit of each dealer in charge of each game table and a numerical value in a probability statistical calculation when a predetermined number of games is finished.

20. The game management system according to claim 3, wherein the calculator is configured to perform the function to compare a result of the actual win rate and the profit of each dealer in charge of each game table and a numerical value based on past accumulated data when a predetermined number of games is finished.

21. The game management system according to claim 1, wherein the calculator is further configured to calculate a profit of a casino based on the detected bet and the game result.