MANAGEMENT SYSTEM

TECHNICAL FIELD

[0001]

This invention relates to a management system for managing roulette games played with roulette chips at a roulette table.

TECHNICAL BACKGROUND

[0002]

In recent years, in casino facilities, in games played using gaming chips at tables, wagered betting gaming chips (hereinafter referred to as “betting chips”) are managed by reading RFID tags embedded in the gaming chips or by capturing the gaming chips with a camera and analyzing the images. The system supports dealer operations such as collecting betting chips, paying out dividends to betting chips, etc., according to game results (see, for example, Patent Document 1).

[0003]

Here, when the betting chips are ascertained by reading the RFID tags embedded in the betting chips, the betting chips can be read relatively accurately as long as there is no abnormality in the RFID tags. On the other hand, when using RFID, it is often relatively difficult to accurately distinguish and recognize locations of the chips (which represents the betting target).

[0004]

In contrast, when betting chips are captured by a camera, the position of the betting chips can be recognized relatively accurately, but it may not be possible to recognize betting chips that are in the camera's blind spot due to other betting chips.

PRIOR ARTS LIST

[0005] Patent Document 1: Japanese Patent Publication No. 2023-112690

SUMMARY OF THE INVENTION

[0006]

Embodiments of the present invention aim to provide a system that may recognize betting chips and supports dealer operations, especially in roulette games. In particular, the present invention may support dealer operations by recognizing betting chips in roulette games using both RFID tags and a camera, based on the advantages and disadvantages of recognizing betting chips using RFID tags and a camera as described above.

[0007]

One aspect of the present invention provides a management system for managing a roulette game played with roulette chips on a roulette table equipped with a wheel and a betting area in which a plurality of betting target areas are segmented. In the roulette game, the roulette chips having different colors for different players are used. The roulette chip

has an RFID tag that stores information corresponding to at least its color, and the color appears at least on a side surface of the roulette chip. The management system comprises: at least two cameras, each configured to produce an image or video of the betting area from different oblique upward positions; one or more betting area antennas installed into the betting area and configured to read the RFID tags of the roulette chips placed in the betting area; an analyzer configured to determine, by analyzing the images or video, the number of the roulette chips for each color bet on the betting area, a plurality of boundaries of adjacent betting areas, and a positional relationship between the roulette chips and the boundaries; a controller configured to control the at least two cameras, the one or more betting area antennas, and the analyzer to perform a dealer support processing for payouts; and a display configured to display a result of the dealer support processing. The controller is configured to: read the RFID tag using the one or more betting area antennas to obtain a first reading result for winning chips remaining after a game result has been determined on the wheel and non-winning chips have been collected by a dealer, capture the winning chips using the at least two cameras to obtain first images or videos, and analyze the first images or videos using the analyzer to determine a number of image-recognizable winning chips for each color for which occlusion has not occurred in any one of the first images or videos; subtract the number of the image-recognizable winning chips for each color from a number of winning chips for each color indicated by the first reading result to determine a number of occluded winning chips for each color having occlusion in all of the first images and videos; and calculate a payout amount for each color based on the number of image-recognizable winning chips for each color and the number of the occluded winning chips for each color and a payout multiplier for each of the image-recognizable winning chips and the occluded winning chips. The display is configured to display the payout amount for each color calculated by the controller.

[0008]

With this configuration, the controller may identify the position of winning chips bet and the number of winning chips for each color and calculate the payout amount for each color, and the display may display the payout amount for each color. This enables the dealer to easily recognize which color chips at which betting position require what amount of payout by simply checking the display.

[0009]

The above management system may further comprise: a collected chip antenna configured to read the RFID tags of the non-winning chips collected by the dealer. The controller may be configured to: read the RFID tags of all the roulette chips that have been bet in the betting area using the one or more betting area antennas to obtain a second reading result; obtain a third reading result by reading the RFID tags of the non-winning chips using the collected chip antenna; and output an alert when a result of subtracting a number of non-winning chips for each color, as indicated by the third reading result, from a number of all the roulette chips bet, as indicated by the second