CHIP RECOGNITION SYSTEM

BACKGROUND

Technical Field

[0001]

The present invention relates to a chip recognition system that recognizes stacked chips.

Related Art

[0002]

In games such as a baccarat game, betting is done by stacking a plurality of chips. Hence, there is a need to correctly recognize the stacked chips.

SUMMARY

[0004]

Embodiments of the present invention seek to provide a chip recognition system capable of accurately recognizing stacked chips.

[0004a]

An aspect of the present invention provides a chip recognition system for a gaming table, the chip recognition system comprising a first game recording apparatus, wherein the first game recording apparatus is configured to capture a first image of chips stacked on the gaming table; a second game recording apparatus, wherein the second game recording apparatus is configured to capture a second image of the chips stacked on the gaming table; and at least one processor, wherein the at least one processor is configured to:

perform an image analysis of the first image and an image analysis of the second image; for each of the image analyses, use an artificial intelligence technology to determine, based on a result of the respective image analysis, a respective number of the chips stacked on the gaming table; and decide a correct number of the chips stacked on the gaming table when the respective determined numbers are different from each other.[0004b]

Another aspect of the present invention provides a chip recognition system for a gaming table, the chip recognition system comprising a first game recording apparatus, wherein the first game recording apparatus is configured to capture a first image of chips stacked on the gaming table; a second game recording apparatus, wherein the second game recording apparatus is configured to capture a second image of the chips stacked on the gaming table; and at least one processor, wherein the at least one processor is configured to: perform an image analysis of the first image and an image analysis of the second image; for each of the image analyses, use an artificial intelligence technology to determine, based on a result of the respective image analysis, a respective at least one type of the chips stacked on the gaming table; and decide a correct at least one type of the chips stacked on the gaming table when the respective determined at least one type are different from each other.

[0004c]

Another aspect of the present invention provides a chip recognition system for a gaming table, the chip recognition system comprising a game recording apparatus, wherein the game recording apparatus is configured to capture an image of chips stacked on the gaming table; and at least one processor, wherein the at least one processor is configured to: perform an image analysis of the image; perform a first determination and a second determination of a number of the chips stacked on the gaming table to obtain respective values of the number, wherein at least one of the determinations is performed using an artificial intelligence technology; and decide a correct value of the number of the chips stacked on the gaming table when the respective determined values of the first determination and the second determination are different from each other.

[0004d]

Another aspect of the present invention provides a chip recognition system for a gaming table, the chip recognition system comprising a game recording apparatus, wherein the game recording apparatus is configured to capture an image of chips stacked on the gaming table; and at least one processor, wherein the at least one processor is configured to: perform an image analysis of the image; perform a first determination and a second determination regarding the chips stacked on the gaming table to obtain by each of the first determination and the second determination a respective determined at least one type of the chips stacked on the gaming table,

wherein at least one of the determinations is performed using an artificial intelligence technology; and decide a correct at least one type of the chips stacked on the gaming table when the respective determined at least one type of the first determination and the second determination are different from each other.

[0005]

According to one embodiment, provided is a chip recognition system that recognizes a chip on a gaming table in an amusement place having the gaming table, the chip recognition system comprising: a game recording apparatus that records, as an image, a state of chips stacked on the gaming table, using a camera; an image analysis apparatus that performs an image analysis on the recorded image of the state of chips; a plurality

CLAIMS

1. A chip recognition system for a gaming table, the chip recognition system comprising:

a first game recording apparatus, wherein the first game recording apparatus is configured to capture a first image of chips stacked on the gaming table;

a second game recording apparatus, wherein the second game recording apparatus is configured to capture a second image of the chips stacked on the gaming table; and

at least one processor, wherein the at least one processor is configured to:

perform an image analysis of the first image and an image analysis of the second image;

for each of the image analyses, use an artificial intelligence technology to determine, based on a result of the respective image analysis, a respective number of the chips stacked on the gaming table; and

decide a correct number of the chips stacked on the gaming table when the respective determined numbers are different from each other.

2. The chip recognition system according to claim 1, wherein:

the first game recording apparatus includes a first camera;

the second game recording apparatus includes a second camera;

the first camera and the second camera are installed in different locations and/or at different angles such that the first camera and the second camera capture different aspects of same chips of the chips stacked on the gaming table.

3. The chip recognition system according to claim 2, wherein the decision of the correct number is obtained based on at least one of:

respective positions of the first camera and the second camera; and

respective numbers of pixels of the first camera and the second camera.

4. The chip recognition system according to claim 1, wherein the decision of the correct number is obtained based on at least one of:

respective focal positions of the first image and the second image;

definitions of the first image and the second image; and

past results of numbers of chips stacked on the gaming table obtained by the at least one processor respectively based on the first game recording apparatus and the second game recording apparatus.

5. The chip recognition system according to claim 1, wherein the first and second game recording apparatuses include respective cameras, and the at least one processor is configured to determine information about the number, a type, and a position of the chips stacked on the gaming table even when a part or an entirety of one or more of the chips is hidden due to a blind spot of at least one of the cameras.

6. A chip recognition system for a gaming table, the chip recognition system comprising:

a first game recording apparatus, wherein the first game recording apparatus is configured to capture a first image of chips stacked on the gaming table;

a second game recording apparatus, wherein the second game recording apparatus is configured to capture a second image of the chips stacked on the gaming table; and

at least one processor, wherein the at least one processor is configured to:

perform an image analysis of the first image and an image analysis of the second image;

for each of the image analyses, use an artificial intelligence technology to determine, based on a result of the respective image analysis, a respective at least one type of the chips stacked on the gaming table; and

decide a correct at least one type of the chips stacked on the gaming table when the respective determined at least one type are different from each other.

7. The chip recognition system according to claim 6, wherein:

the first game recording apparatus includes a first camera;

the second game recording apparatus includes a second camera;

the first camera and the second camera are installed in different locations and/or at different angles such that the first camera and the second camera capture different aspects of same chips of the chips stacked on the gaming table.

8. The chip recognition system according to claim 7, wherein the decision of the correct at least one type is obtained based on at least one of:

respective positions of the first camera and the second camera; and

respective numbers of pixels of the first camera and the second camera.

9. The chip recognition system according to claim 6, wherein the decision of the correct at least one type is obtained based on at least one of:

respective focal positions of the first image and the second image;

definitions of the first image and the second image; and

past results of one or more types of chips stacked on the gaming table obtained by the at least one processor respectively based on the first game recording apparatus and the second game recording apparatus.

10. The chip recognition system according to claim 6, wherein the first and second game recording apparatuses include respective cameras, and the at least one processor is configured to determine information about a number, the at least one type, and a position of the chips stacked on

the gaming table even when a part or an entirety of one or more of the chips is hidden due to a blind spot of at least one of the cameras.

11. A chip recognition system for a gaming table, the chip recognition system comprising:

a game recording apparatus, wherein the game recording apparatus is configured to capture an image of chips stacked on the gaming table; and

at least one processor, wherein the at least one processor is configured to:

perform an image analysis of the image;

perform a first determination and a second determination of a number of the chips stacked on the gaming table to obtain respective values of the number, wherein at least one of the determinations is performed using an artificial intelligence technology; and

decide a correct value of the number of the chips stacked on the gaming table when the respective determined values of the first determination and the second determination are different from each other.

12. A chip recognition system for a gaming table, the chip recognition system comprising:

a game recording apparatus, wherein the game recording apparatus is configured to capture an image of chips stacked on the gaming table; and

at least one processor, wherein the at least one processor is configured to:

perform an image analysis of the image;

perform a first determination and a second determination regarding the chips stacked on the gaming table to obtain by each of the first determination and the second determination a respective determined at least one type of the chips stacked on the gaming table, wherein at least one of the determinations is performed using an artificial intelligence technology; and

decide a correct at least one type of the chips stacked on the gaming table when the respective determined at least one type of the first determination and the second determination are different from each other.