CLAIMS

1. A method for determining an object adding mode, comprising:

obtaining a target video and a to-be-added object set to be added to a target video;

determining time periods corresponding to storyboards of the target video;

determining a presentation period of a to-be-added object in the to-be-added object set in the target video based on the time periods corresponding to the storyboards;

generating object adding indication information based on the determined presentation period, wherein the object adding indication information comprises time prompt information used to indicate the presentation period of the to-be-added object in the to-be-added object set in the target video~~.~~;

~~2. The method according to claim 1,~~ wherein determining the presentation period of the to-be-added object in the to-be-added object set in the target video based on the time periods corresponding to the storyboards comprises:

determining a total duration of the target video;

determining an initial presentation period of the to-be-added object in the to-be-added object set in the target video based on the total duration of the target video;

selecting a to-be-added object crossing storyboards from the to-be-added object set to generate a target object set, based on a matching between the determined initial presentation period and the time periods corresponding to the storyboards of the target video;

determining the presentation period of the to-be-added object in the to-be-added object set in the target video based on an adjustment on the initial presentation period of a target object in the target object set.

~~3~~2. The method according to claim ~~2~~1, wherein determining the presentation period of the to-be-added object in the to-be-added object set in the target video based on the adjustment on the initial presentation period of the target object in the target object set comprises:

determining whether the target object in the target object set satisfies a preset period adjusting condition;

adjusting the initial presentation period of the target object that satisfies the period adjusting condition, so as to prevent the adjusted presentation period of the adjusted target object from crossing storyboards.

43. The method according to claim 32, wherein determining whether the target object in the target object set satisfies the preset period adjusting condition comprises:

determining a shot switching moment corresponding to the target object in the target object set based on the determined initial presentation period and the time periods corresponding to the storyboards of the target video;

determining an adjusting direction of an initial presentation period of a to-be-adjusted target object in a time dimension based on the determined shot switching moment;

determining whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with an initial presentation period of a to-be-added object of a storyboard in the adjusting direction;

determining whether the target object in the target object set satisfies the preset period adjusting condition, based on whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction.

54. The method according to claim 43, wherein determining whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction comprises:

determining a presentation interval between a to-be-added object closest to the initial presentation period of the to-be-adjusted target object and the to-be-adjusted target object in the adjusting direction;

determining whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction, based on a comparison between the presentation interval and a duration indicated by the initial presentation period of the to-be-adjusted target object.

65. The method according to claim 43, wherein determining whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction comprises:

determining a total duration of the initial presentation period of the to-be-added

object corresponding to a target storyboard, wherein the target storyboard is consistent with the adjusting direction, and overlaps with the initial presentation period of the to-be-adjusted target object;

determining whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction, based on the total duration and the duration of the time period corresponding to the target storyboard.

~~7~~6. The method according to ~~any one of~~ claims ~~4-6~~3, wherein determining whether the target object in the target object set satisfies the preset period adjusting condition, based on whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction comprises:

in response to determining that the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction does not overlap with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction, determining that the preset period adjusting condition is satisfied.

~~8~~7. The method according to ~~any one of~~ claims ~~4-6~~3, wherein determining whether the target object in the target object set satisfies the preset period adjusting condition, based on whether the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction comprises:

in response to determining that the initial presentation period of the to-be-adjusted target object after adjustment in the adjusting direction overlaps with the initial presentation period of the to-be-added object of the storyboard in the adjusting direction, determining whether an initial presentation period of the to-be-adjusted target object after adjustment in an opposite direction of the adjusting direction overlaps with an initial presentation period of a to-be-added object of a storyboard in the opposite direction of the adjusting direction;

in response to determining that the initial presentation period of the to-be-adjusted target object after adjustment in the opposite direction of the adjusting direction does not overlap with the initial presentation period of the to-be-added object of the storyboard in the opposite direction of the adjusting direction, determining that the

preset period adjusting condition is satisfied.

~~9~~8. The method according to ~~any one of~~ claim~~s~~ ~~3-8~~2, wherein adjusting the initial presentation period of the target object that satisfies the period adjusting condition comprises:

adjusting the initial presentation period of the target object that satisfies the period adjusting condition to a new storyboard, and enabling the to-be-added object under the new storyboard to be evenly distributed.

~~10~~9. The method according to ~~any one of~~ claim~~s~~ 1~~-9~~, wherein the object adding indication information further comprises position indication information used to indicate a presentation position of the to-be-added object in the to-be-added object set in a video frame of the target video; and

wherein generating the object adding indication information based on the determined presentation period comprises:

extracting a video frame matching the determined presentation period from the target video;

performing a preset category object detection on the extracted video frame to generate position information of a preset category object;

obtaining a display area of the to-be-added object corresponding to the to-be-added object set;

determining a physical occlusion metric for the display area being located at different positions in the matched video frame based on an overlapping degree between the display area and a position indicated by the generated position information of the preset category object;

determining a presentation position of the to-be-added object in the matched video frame based on the physical occlusion metric;

generating the object adding indication information based on the determined presentation period and the presentation position.

~~11~~10. The method according to claim ~~10~~9, wherein the preset category object comprises a human face image and a text image; and

wherein determining the physical occlusion metric for the display area being located at different positions in the matched video frame based on the overlapping degree between the display area and the position indicated by the generated position information of the preset category object comprises:

determining a first overlapping metric between the display area and a position indicated by generated position information of the human face image;

determining a second overlapping metric between the display area and a position indicated by generated position information of the text image;

determining the physical occlusion metric for the display area being located at different positions in the matched video frame based on the generated first overlapping metric and second overlapping metric.

~~12~~11. The method according to claim ~~10 or 11~~9, wherein obtaining the display area of the to-be-added object corresponding to the to-be-added object set comprises:

receiving a length-width ratio and a minimum width of the to-be-added object sent by a client;

obtaining a number of characters comprised in the to-be-added object;

generating a character area of the to-be-added object based on the number of characters and a size of a preset font;

generating the display area of the to-be-added object based on the character area, wherein a length-width ratio of the display area is consistent with the length-width ratio of the to-be-added object sent by the client, and a width of the display area is not less than the minimum width.

~~13~~12. The method according to ~~any one of~~ claim~~s~~ 9~~10-12~~, wherein determining the presentation position of the to-be-added object in the matched video frame based on the physical occlusion metric comprises:

obtaining a position preference metric of the to-be-added object, wherein the position preference metric comprises at least one of the following: a user position preference metric, a position saliency metric of the to-be-added object, and a regularity metric of the presentation position of the to-be-added object;

generating position evaluation metrics for the display area being located at different positions in the matched video frame based on the physical occlusion metric and the position preference metric;

determining a position corresponding to a maximum value of the position evaluation metrics as the presentation position of the to-be-added object in the matched video frame.

~~14~~13. An apparatus for determining an object adding mode, comprising:

an obtaining unit, configured to obtain a target video and a to-be-added object set

to be added to a target video;

a first determining unit, configured to determine time periods corresponding to storyboards of the target video;

a second determining unit, configured to determine a presentation period of a to-be-added object in the target video based on the time periods corresponding to the storyboards;

a generating unit, configured to generate object adding indication information based on the determined presentation period, wherein the object adding indication information comprises time prompt information used to indicate the presentation period of the to-be-added object in the to-be-added object set in the target video~~.~~;

wherein the second determining unit comprises:

a first determining subunit, configured to determine a total duration of the target video;

a second determining subunit, configured to determine an initial presentation period of the to-be-added object in the to-be-added object set in the target video based on the total duration of the target video;

a selecting subunit, configured to select a to-be-added object crossing storyboards from the to-be-added object set to generate a target object set, based on a matching between the determined initial presentation period and the time periods corresponding to the storyboards of the target video;

an adjusting subunit, configured to determine the presentation period of the to-be-added object in the to-be-added object set in the target video based on an adjustment on the initial presentation period of a target object in the target object set.

~~15~~14. An electronic device, comprising:

one or more processors;

a storage apparatus on which one or more programs are stored;

when the one or more programs are executed by the one or more processors, the one or more processors are enabled to implement the method according to any one of claims 1-~~13~~12.

~~16~~15. A computer-readable ~~storage~~ medium on which a computer program is stored, wherein when the program is executed by a processor, the method according to any one of claims 1-~~13~~ 12 is implemented.

~~17. A computer program product, comprising computer program instructions,~~

~~wherein the computer program instructions enable a computer to perform the method according to any of claims 1-13.~~

~~18. A computer program, wherein the computer program enables a computer to perform the method according to any of claims 1-13.~~