

feature sequences of a first media object and second media feature sequences of a second media object, wherein the first media feature sequence comprises a plurality of first media feature units arranged in sequence, and the second media feature sequence comprises a plurality of second media feature units arranged in sequence; determining unit similarities between the first media feature units and the second media feature units; determining a similarity matrix between the first media feature sequences and the second media feature sequences according to the unit similarities; and determining a similarity of the first media object and the second media object according to the similarity matrix, wherein the plurality of first media feature units are arranged in chronological order in the first media feature sequences, and the plurality of second media feature units are arranged in chronological order in the second media feature sequences, wherein one point in the similarity matrix corresponds to one unit similarity, and the points of the similarity matrix are arranged according to the sequence of the first media feature units in the first media feature sequences in a transverse direction and according to the sequence of the second media feature units in the second media feature sequences in a longitudinal direction.

[0007] The object of the present disclosure can be further realized by adopting the following technical measures.

[0008] The method for comparing media features aforementioned, wherein, the first media feature units and the second media feature units are floating point number features; the determining unit similarities between the first media feature units and the second media feature units comprises: determining the unit similarities according to a cosine distance between the first media feature units and the second media feature units.

[0009] The method for comparing media features aforementioned, wherein, the first media feature units and the second media feature units are binary features and have the same feature unit length; the determining unit similarities between the first media feature units and the second media feature units comprises:

determining the unit similarities according to a Hamming distance between the first media feature units and the second media feature units.

[0010] The method for comparing media features aforementioned, wherein, the obtaining first media feature sequences of a first media object and second media
5 feature sequences of a second media object comprises: obtaining various types of first media feature sequences of the first media object, and obtaining various types of second media feature sequences of the second media object; the determining unit similarities between the first media feature units and the second media feature

start and an end of the first matching straight line or second matching straight line reach a preset unit similarity value, removing portions of the start and the end that do not reach the preset unit similarity value, and keeping and defining a middle segment of the straight line as a third matching straight line; and determining the similarity of the first media object and the second media object according to the linear similarity of the third matching straight line, and determining a start and end time of matching segments according to a start point and an end point of the third matching straight line.

[0019] The object of the present disclosure is also realized by adopting the following technical scheme. In a second aspect, the present disclosure provides a device for comparing media features, comprising: a media feature sequence obtaining module, configured to obtain first media feature sequences of a first media object and second media feature sequences of a second media object, wherein the first media feature sequence comprises a plurality of first media feature units arranged in sequence, and the second media feature sequence comprises a plurality of second media feature units arranged in sequence; a unit similarity determining module, configured to determine unit similarities between the first media feature units and the second media feature units; a similarity matrix determining module, configured to determine a similarity matrix between the first media feature sequences and the second media feature sequences according to the unit similarities; and a similarity determining module, configured to determine a similarity of the first media object and the second media object according to the similarity matrix, wherein the plurality of first media feature units are arranged in chronological order in the first media feature sequences, and the plurality of second media feature units are arranged in chronological order in the second media feature sequences, wherein one point in the similarity matrix corresponds to one unit similarity, and the points of the similarity matrix are arranged according to the sequence of the first media feature units in the first media feature sequences in a transverse direction and according to the sequence of the second media

feature units in the second media feature sequences in a longitudinal direction.

[0020] The object of the present disclosure can be further realized by adopting the following technical measures.

[0021] The device for comparing media features aforementioned, further
5 comprising a module for performing the steps of any one of the aforementioned.

[0022] The object of the present disclosure can be realized by adopting the following technical measures. In a third aspect, the present disclosure provides a hardware device for comparing media features

, comprising: a memory, configured to store non-transitory computer readable instructions; and a processor, configured to execute the computer readable instructions, wherein, when the computer readable instructions are executed by the processor, such that the method for comparing media features according to any
5 one of the aforementioned.

[0023] The object of the present disclosure can be realized by adopting the following technical measures. A terminal equipment proposed according to the disclosure, comprising the device for comparing media features according to any one of the aforementioned.

10 **[0024]** The object of the present disclosure can be realized by adopting the following technical measures. In a fourth aspect, the present disclosure provides a computer readable storage medium for storing non-transitory computer readable instructions, wherein, when the non-transitory computer readable instruction are executed by a computer, such that the computer perform the method for
15 comparing media features according to any one of the aforementioned.

[0025] The above description is only an overview of the technical scheme of the present disclosure. In order to have a better understanding of the technical means of the present disclosure, it can be implemented in accordance with the contents of the description, and to make the above and other purposes, features and
20 advantages of the present disclosure more obvious and understandable, the following is a preferred embodiment, and is described in detail with the accompanying drawings.

Brief Description of the Drawings

25 **[0026]** Fig. 1 is a flowchart of a method for comparing media features according to one embodiment of the present disclosure;

[0027] Fig. 2 is a gray scale diagram corresponding to a similarity matrix

according to one embodiment of the present disclosure;

[0028] Fig. 3 is a flowchart of comparison using a dynamic programming method

CLAIMS

1. A method for comparing media features, comprising:

obtaining first media feature sequences of a first media object and second
5 media feature sequences of a second media object, wherein the first media feature
sequence comprises a plurality of first media feature units arranged in sequence,
and the second media feature sequence comprises a plurality of second media
feature units arranged in sequence;

determining unit similarities between the first media feature units and the
10 second media feature units;

determining a similarity matrix between the first media feature sequences and
the second media feature sequences according to the unit similarities; and

determining a similarity of the first media object and the second media object
according to the similarity matrix, wherein the plurality of first media feature units
15 are arranged in chronological order in the first media feature sequences, and the
plurality of second media feature units are arranged in chronological order in the
second media feature sequences, wherein one point in the similarity matrix
corresponds to one unit similarity, and the points of the similarity matrix are
arranged according to the sequence of the first media feature units in the first
20 media feature sequences in a transverse direction and according to the sequence of
the second media feature units in the second media feature sequences in a
longitudinal direction.

2. The method for comparing media features according to claim 1, wherein,

the first media feature units and the second media feature units are floating
25 point number features;

the determining unit similarities between the first media feature units and the
second media feature units comprises:

determining the unit similarities according to a cosine distance between the first media feature units and the second media feature units.

3. The method for comparing media features according to claim 1, wherein,
the first media feature units and the second media feature units are binary
5 features and have the same feature unit length;

the determining unit similarities between the first media feature units and the second media feature units comprises:

determining the unit similarities according to a Hamming distance between the first media feature units and the second media feature units.

10 4. The method for comparing media features according to claim 1, wherein,
the obtaining first media feature sequences of a first media object and second media feature sequences of a second media object comprises: obtaining various types of first media feature sequences of the first media object, and obtaining various types of second media feature sequences of the second media object;

15 the determining unit similarities between the first media feature units and the second media feature units comprises: determining the unit similarity between the first media feature units and the second media feature units of the same type separately, so as to obtain the various unit similarities;

the determining a similarity matrix between the first media feature sequences
20 and the second media feature sequences according to the unit similarities comprises: determining an average value or minimum value of the various unit similarities, and determining the similarity matrix according to the average value or minimum value of the various unit similarities.

5. The method for comparing media features according to claim 1, wherein
25 the determining a similarity of the first media object and the second media object according to the similarity matrix comprises: determining a similarity and matching segments of the first media object and the second media object

according to a straight line in the similarity matrix.

6. The method for comparing media features according to claim 7, wherein the determining a similarity of the first media object and the second media object according to a straight line in the similarity matrix comprises:

5 defining a plurality of straight lines with a slope being a preset slope value as candidate straight lines, and according to an average value or sum value of unit similarities contained in each candidate straight line, determining a linear similarity of the candidate straight line;

10 from the plurality of candidate straight lines, selecting and defining one candidate straight line with the maximum linear similarity as a first matching straight line;

15 determining the similarity of the first media object and the second media object according to the linear similarity of the first matching straight line; and determining a start and end time of matching segments of the first media object and the second media object according to a start point and an end point of the first matching straight line.

7. The method for comparing media features according to claim 6, wherein a plurality of preset slope values are set, and the candidate straight line is a straight line with a slope equal to any one of the plurality of preset slope values.

20 8. The method for comparing media features according to claim 1, wherein the determining a similarity of the first media object and the second media object according to the similarity matrix comprises:

selecting a plurality of points with the maximum unit similarity from the similarity matrix as similarity extreme points;

25 fitting a straight line in the similarity matrix as a second matching straight line based on the similarity extreme points;

determining the similarity of the first media object and the second media

object according to an average value or sum value of unit similarities contained in the second matching straight line; and determining a start and end time of matching segments of the first media object and the second media object according to a start point and an end point of the second matching straight line.

5 9. The method for comparing media features according to claim 8, wherein the fitting a straight line in the similarity matrix as a second matching straight line based on the similarity extreme points comprises: fitting a straight line with a slope equal to or close to the preset slope value in the similarity matrix by using a random sample consensus method as the second matching straight line.

10 10. The method for comparing media features according to claim 6 or 8, wherein the determining a similarity of the first media object and the second media object according to the similarity matrix further comprises:

judging whether points at a start and an end of the first matching straight line or second matching straight line reach a preset unit similarity value, removing
15 portions of the start and the end that do not reach the preset unit similarity value, and keeping and defining a middle segment of the straight line as a third matching straight line; and

determining the similarity of the first media object and the second media object according to the linear similarity of the third matching straight line, and
20 determining a start and end time of matching segments according to a start point and an end point of the third matching straight line.

11. A device for comparing media features, comprising:

a media feature sequence obtaining module, configured to obtain first media feature sequences of a first media object and second media feature sequences of a
25 second media object, wherein the first media feature sequence comprises a plurality of first media feature units arranged in sequence, and the second media feature sequence comprises a plurality of second media feature units arranged in sequence;

a unit similarity determining module, configured to determine unit similarities between the first media feature units and the second media feature units;

5 a similarity matrix determining module, configured to determine a similarity matrix between the first media feature sequences and the second media feature sequences according to the unit similarities; and

10 a similarity determining module, configured to determine a similarity of the first media object and the second media object according to the similarity matrix, wherein the plurality of first media feature units are arranged in chronological order in the first media feature sequences, and the plurality of second media feature units are arranged in chronological order in the second media feature sequences, wherein one point in the similarity matrix corresponds to one unit similarity, and the points of the similarity matrix are arranged according to the sequence of the first media feature units in the first media feature sequences in a transverse direction and according to the sequence of the second media feature units in the second media feature sequences in a longitudinal direction.

12. The device for comparing media features according to claim 11,

wherein the obtaining first media feature sequences of a first media object and second media feature sequences of a second media object comprises:
20 obtaining various types of first media feature sequences of the first media object, and obtaining various types of second media feature sequences of the second media object;

the determining unit similarities between the first media feature units and the second media feature units comprises: determining the unit similarity between the
25 first media feature units and the second media feature units of the same type separately, so as to obtain the various unit similarities;

the determining a similarity matrix between the first media feature sequences and the second media feature sequences according to the unit similarities

comprises: determining an average value or minimum value of the various unit similarities, and determining the similarity matrix according to the average value or minimum value of the various unit similarities.

13. The device for comparing media features according to claim 12, wherein
5 the determining a similarity of the first media object and the second media object according to the similarity matrix comprises: determining a similarity and matching segments of the first media object and the second media object according to a straight line in the similarity matrix.

14. The device for comparing media features according to claim 13, wherein
10 the determining a similarity of the first media object and the second media object according to a straight line in the similarity matrix comprises:

defining a plurality of straight lines with a slope being a preset slope value as candidate straight lines, and according to an average value or sum value of unit similarities contained in each candidate straight line, determining a linear
15 similarity of the candidate straight line;

from the plurality of candidate straight lines, selecting and defining one candidate straight line with the maximum linear similarity as a first matching straight line;

determining the similarity of the first media object and the second media
20 object according to the linear similarity of the first matching straight line; and determining a start and end time of matching segments of the first media object and the second media object according to a start point and an end point of the first matching straight line.

15. A hardware device for comparing media features, comprising:
25 a memory, configured to store non-transitory computer readable instructions;
and
a processor, configured to execute the computer readable instructions,

wherein, when the computer readable instructions are executed by the processor, such that the method for comparing media features according to any one of claims 1-10 is realized.

16. A computer readable storage medium for storing non-transitory computer
5 readable instructions, wherein, when the non-transitory computer readable instruction are executed by a computer, such that the computer perform the method for comparing media features according to any one of claims 1-10.