Description

MEDIA RETRIEVAL METHOD AND APPARATUS

CROSS-REFERENCE TO RELATED APPLICATION

The disclosure claims the priority benefit of Chinese patent application Ser. No. 201810272795.X, filed on Mar. 29, 2018, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

The present disclosure relates to the technical field of media processing, in particular to a media retrieval method and apparatus.

BACKGROUND ART

Video features, audio features and other media features (or called media fingerprints) as well as feature-based media retrieval are widely used in today's "multimedia information society". The media retrieval is firstly applied to identifying songs where the corresponding songs are identified by inputting a piece of audio and extracting and retrieving the fingerprint features of the audio. In addition, the media retrieval can also be applied to content monitoring, such as media deduplication, voice advertisement monitoring based on retrieval, media copyright and the like.

The existing media retrieval methods have the problems of poor accuracy and low speed so as to generate huge consumption for operation resources and storage resources.

SUMMARY

In a first aspect, the present disclosure provides a media retrieval method, comprising: acquiring a media feature of a query media as a first media feature

which contains a plurality of first media feature units; acquiring a media feature of an existing media of a plurality of existing media as a second media feature in advance which contains a plurality of second media feature units; and indexing the second media feature to obtain a feature index of the existing media in advance; performing, according to each individual of the first media feature unit, a first ranking on athe plurality of existing media, and taking, according to a result of the first ranking, first k existing media as a first candidate media set, where k is a positive integer, wherein the first ranking is a term frequency–inverse document frequency (TF-IDF) ranking; and performing, according to the plurality of the first media feature units arranged in sequence, a second ranking on the first candidate media set, and taking, according to a result of the second ranking, first n first candidate media as a retrieval result, where n is a positive integer, wherein the step of performing, according to the plurality of first media feature units arranged in sequence, a second ranking on the first candidate media set comprises: obtaining a similarity matrix of the media in the first candidate media set according to the feature index of the existing media and the first media feature, and ranking the media in the first candidate media set on the basis of a straight line in the similarity matrix.

In a second aspect, the present disclosure provides a media retrieval apparatus, comprising: a media feature acquisition module configured to acquire a media feature of a media as a first media feature which contains a plurality of first media feature units; a feature indexing module configured to acquire a media feature of the existing media as a second media feature in advance which contains a plurality of second media feature units, and index the second media feature to obtain a feature index of the existing media in advance; a first ranking module configured to perform, according to each individual of the first media feature unit, a first ranking on the plurality of existing media, and to take, according to a result of the first ranking, first k existing media as a first candidate media set, where k is a positive integer, wherein the first ranking is a term frequency–inverse document frequency (TF-IDF) ranking; and a second

ranking module configured to perform, according to the plurality of the first media feature units arranged in sequence, a second ranking on the first candidate media set, and to take, according to a result of the second ranking, first n first candidate media as a retrieval result, where n is a positive integer, wherein the second ranking module further is further configured to obtain a similarity matrix of the media in the first candidate media set according to the feature index of the existing media and the first media feature, and to rank the media in the first candidate media set on the basis of a straight line in the similarity matrix.

In a third aspect, the present disclosure provides a hardware device for media retrieval, comprising: a memory, configured to store non-transitory computer-readable instructions; and a processor, configured to perform the media retrieval method according to the first aspect when the computer-readable instructions are executed by the processor.

In a fourth aspect, the present disclosure provides a computer-readable storage medium, storing non-transitory computer-readable instructions to perform the media retrieval method according to the first aspect when the non-transitory computer-readable instructions are executed by a computer.

The purpose of the present disclosure is to provide a new media retrieval method and device.

Claims

1. A media retrieval method, comprising:

acquiring a media feature of a query media as a first media feature which contains a plurality of first media feature units;

acquiring a media feature of an existing media of a plurality of existing media as a second media feature in advance which contains a plurality of second media feature units; and

indexing the second media feature to obtain a feature index of the existing media in advance;

performing, according to each individual of the first media feature unit, a first ranking on the plurality of existing media, and taking, according to a result of the first ranking, first k existing media as a first candidate media set, where k is a positive integer, wherein the first ranking is a term frequency–inverse document frequency (TF-IDF) ranking; and

performing, according to the plurality of the first media feature units arranged in sequence, a second ranking on the first candidate media set, and taking, according to a result of the second ranking, first n first candidate media as a retrieval result, where n is a positive integer, wherein the step of performing, according to the plurality of first media feature units arranged in sequence, a second ranking on the first candidate media set comprises:

obtaining a similarity matrix of the media in the first candidate media set according to the feature index of the existing media and the first media feature, and ranking the media in the first candidate media set on the basis of a straight line in the similarity matrix.

2. The method according to claim 1, wherein the step of performing, according to each individual of the first media feature unit, a term frequency–inverse document frequency (TF-IDF) ranking on the plurality of existing media comprises:

matching the feature index of the existing media with the first media feature unit to perform the TF-IDF ranking on the existing media.

3. The method according to claim 2, wherein the step of obtaining a feature index of the existing media in advance comprises:

acquiring a forward index and/or an inverted index of the existing media in advance.

4. The method according to claim 2, wherein the step of matching the feature index of the existing media with the first media feature unit comprises:

making an exact match for the feature index of the existing media and the first media feature unit.

5. The method according to claim 1, wherein the step of acquiring a media feature of a query media as a first media feature comprises: acquiring multiple types of first media features of the query media;

the step of acquiring the media feature of the existing media as a second media feature in advance comprises: acquiring multiple types of second media feature of the existing media; and

the step of obtaining a similarity matrix of the media in the first candidate media set according to the feature index of the existing media and the first media feature comprises: determining the similarity matrix according to the multiple types of the second media features and the multiple types of the first media features.

6. The method according to claim 5, wherein each type of the first media feature includes a plurality of the first media feature units, and each type of the second media feature includes a plurality of the second media feature units;

the step of determining the similarity matrix according to the multiple types of the second media features and the multiple types of the first media features comprises:

determining the unit similarity of the same type of the second media feature unit and the first media feature unit respectively so as to obtain multiple types of the unit similarities; determining the average or minimum value of the multiple types of the unit similarities and determining the similarity matrix according to the average or minimum value of the multiple types of the unit similarities.

7. The method according to claim 1, further comprising:

slicing the query media and the existing media according to a preset time span to obtain a plurality of segments of the sub query media and segments of the sub existing media, and extracting the media features of the plurality of segments of the sub query media and segments of the sub existing media respectively to obtain a plurality of the first sub media features and the second sub media features of the same length.

8. The method according to claim 1, further comprising:

slicing, before the first ranking is performed, the obtained first media feature of the query media and the second media feature of the existing media according to a preset length to obtain a plurality of the first sub media features and the second sub media features of the same length.

9. The method according to claim 1, wherein, the plurality of the first media feature units are arranged in a temporal order in the first media feature, and the plurality of the second media feature units are arranged in a temporal order in the second media feature.

10. The method according to claim 9, further comprising:

determining duplicate segments of the query media and the media in the retrieval result according to the straight line in the similarity matrix.

11. A media retrieval apparatus, comprising:

a media feature acquisition module configured to acquire a media feature of a media as a first media feature which contains a plurality of first media feature units;

a feature indexing module configured to acquire a media feature of the existing media as a second media feature in advance which contains a plurality of second media feature units, and index the second media feature to obtain a feature index of the existing media in advance;

a first ranking module configured to perform, according to each individual of the first media feature unit, a first ranking on the plurality of existing media, and to take, according to a result of the first ranking, first k existing media as a first candidate media set, where k is a positive integer, wherein the first ranking is a term frequency–inverse document frequency (TF-IDF) ranking; and

a second ranking module configured to perform, according to the plurality of the first media feature units arranged in sequence, a second ranking on the first candidate media set, and to take, according to a result of the second ranking, first n first candidate media as a retrieval result, where n is a positive integer, wherein the second ranking module further is further configured to obtain a similarity matrix of the media in the first candidate media set according to the feature index of the existing media and the first media feature, and to rank the media in the first candidate media set on the basis of a straight line in the similarity matrix.

12. The apparatus according to claim 11, wherein the media feature acquisition module feature further comprises an acquisition module for multiple types of first media features configured to acquiring multiple types of first media features of the query media;

the feature indexing module further comprises an acquisition module for multiple types of second media features configured to acquire multiple types of second media feature of the existing media; and

the second ranking module further comprises a second determination sub-module for unit similarity configured to determining the similarity matrix according to the multiple types of the second media features and the multiple types of the first media features.

13. A hardware device for media retrieval, comprising:

a memory, configured to store non-transitory computer-readable instructions; and

a processor, configured to perform the media retrieval method according to any of claims 1 to 10 when the computer-readable instructions are executed by the processor.

14. A computer-readable storage medium, storing non-transitory computer-readable instructions to perform the media retrieval method according to any of claims 1 to 10 when the non-transitory computer-readable instructions are executed by a computer.