CLAIMS

1. An image retrieval method, comprising:

respectively performing a dimension reduction operation on convolutional layer features of an image to be retrieved to obtain dimension-reduced features, a dimension of each dimension-reduced feature being smaller than a dimension of a respective one of the convolutional layer features;

clustering the dimension-reduced features to obtain a plurality of clustering features;

performing feature fusion on the plurality of clustering features to obtain a global feature; and

retrieving, on the basis of the global feature, the image to be retrieved from a database,

wherein the clustering the dimension-reduced features to obtain a plurality of clustering features comprises:

clustering the dimension-reduced features on the basis of distances among the dimension-reduced features to obtain a plurality of feature clustering centers; and

respectively sampling, for each of the plurality of feature clustering centers, a maximum value of corresponding convolutional layer features as the clustering feature of the feature clustering center.

2. The image retrieval method according to claim 1, further comprising: before the respectively performing a dimension reduction operation on convolutional layer features of an image to be retrieved,

inputting the image to be retrieved to a convolutional neural network to obtain the convolutional layer features.

3. The image retrieval method according to claim 2, wherein each of the convolutional layer features represents a feature of a corresponding pixel area in the image to be retrieved.

4 The image retrieval method according to claim 1, wherein the performing feature fusion on the plurality of clustering features to obtain a global feature comprises:

respectively performing regression processing on each of the plurality

clustering features to obtain regressed clustering features; and

adding the regressed clustering features to obtain the global feature.

5. The image retrieval method according to claim 4, wherein the respectively performing regression processing on each of the plurality clustering features to obtain regressed clustering features comprises:

respectively and sequentially performing normalization processing, whitening processing and renormalization processing on each of the plurality of clustering features to obtain the regressed clustering features.

6. The image retrieval method according to claim 1, wherein the retrieving, on the basis of the global feature, the image to be retrieved from a database comprises:

obtaining, from the database on the basis of the global feature, K images having top-k similarities to the image to be retrieved, K being an integer greater than or equal to 1.

7. The image retrieval method according to claim 6, wherein the obtaining, from the database on the basis of the global feature, K images having top-K similarities to the image to be retrieved comprises:

computing distances between the global feature and image features in the database; and

obtaining, from the database on the basis of the distances between the global feature and the image features in the database, K images having least-K distances to the global feature as the K images having top-K similarities to the image to be retrieved.

8. The image retrieval method according to claim 6 or 7, further comprising:

presenting the K images and the similarities between the respective K images and the image to be retrieved.

9. The image retrieval method according to claim 1, wherein the dimension of the dimension-reduced features is 5.

10. The image retrieval method according to claim 1, wherein the number of the clustering features is 32.

11. An image retrieval apparatus, comprising:

a dimension reduction module, configured to respectively perform a dimension reduction operation on convolutional layer features of an image to be retrieved to obtain dimension-reduced features, a dimension of each dimension-reduced feature being smaller than a dimension of a respective one of the convolutional layer features;

a clustering module, configured to cluster the dimension-reduced features to obtain a plurality of clustering features;

a fusion module, configured to perform feature fusion on the plurality of clustering features to obtain a global feature; and

a retrieval module, configured to retrieve, on the basis of the global feature, the image to be retrieved from a database,

wherein the clustering module comprises:

a first processing unit, configured to cluster the dimension-reduced features on the basis of the distances among the dimension-reduced features to obtain a plurality of feature clustering centers; and

a sampling unit, configured to respectively sample, for each of the plurality of feature clustering centers, a maximum value of corresponding convolutional layer features as the clustering feature of the feature clustering center.

12. The image retrieval apparatus according to claim 11, further comprising:

an input module, configured to input the image to be retrieved to a convolutional neural network to obtain the convolutional layer features.

13. The image retrieval apparatus according to claim 12, wherein each of the convolutional layer feature represents a feature of a corresponding pixel area in the image to be retrieved.

14. The image retrieval apparatus according to claim 11, wherein the fusion module comprises:

a regression processing unit, configured to respectively perform regression processing on each of the plurality clustering features to obtain regressed clustering features; and

an adding unit, configured to add the regressed clustering features to obtain the global feature.

15. The image retrieval apparatus according to claim 14, wherein the regression processing unit comprises:

a second processing unit, configured to respectively and sequentially perform normalization processing, whitening processing and renormalization processing on each of the plurality of clustering features to obtain the regressed clustering features.

16. The image retrieval apparatus according to claim 11, wherein the retrieval module comprises:

a first obtaining unit, configured to obtain, from the database on the basis of the global feature, K images having top-K similarities to the image to be retrieved, K being an integer greater than or equal to 1.

17. A device, comprising a memory, a processor, and a computer program which is stored in the memory and can be run on the processor, wherein when the processor executes the computer program, the operations of an image retrieval method are implemented, the method comprises of:

respectively performing a dimension reduction operation on convolutional layer features of an image to be retrieved to obtain dimension-reduced features, a dimension of each dimension-reduced feature being smaller than a dimension of a respective one of the convolutional layer features;

clustering the dimension-reduced features to obtain a plurality of clustering features;

performing feature fusion on the plurality of clustering features to obtain a global feature; and

retrieving, on the basis of the global feature, the image to be retrieved from a database,

wherein the clustering the dimension-reduced features to obtain a plurality of clustering features comprises:

clustering the dimension-reduced features on the basis of distances among the dimension-reduced features to obtain a plurality of feature clustering centers; and

respectively sampling, for each of the plurality of feature clustering centers, a

maximum value of corresponding convolutional layer features as the clustering feature of the feature clustering center.

18. A computer readable storage medium having a computer program stored thereon, wherein when the computer program is executed by a processor, the operations of the method according to any one of claims 1-10 are implemented.