

CLAIMS

1. A method of training a neural network, comprising:
 - detecting a first-class object and a second-class object in an image;
 - generating at least one candidate object group based on the detected first-class
 - 5 object and the detected second-class object, wherein the candidate object group comprises at least one said first-class object and at least two said second-class objects;
 - determining a matching degree between the first-class object and each second-class object in the same candidate object group based on the neural network;
 - determining a group correlation loss of the candidate object group based on the
 - 10 matching degree between the first-class object and each second-class object in the same candidate object group, wherein the group correlation loss is positively correlated with the matching degree between the first-class object and a second-class object which is non-correlated with the first-class object; and
 - adjusting network parameters of the neural network based on the group
 - 15 correlation loss;
 - wherein each second-class object and the first-class object in the candidate object group satisfy a preset relative position relationship; or
 - there is an overlapping region between a detection box of each second-class object in the candidate object group and a detection box of the first-class object in the
 - 20 candidate object group.
2. The method according to claim 1, wherein the group correlation loss is further negatively correlated with a matching degree between the first-class object and a second-class object correlated with the first-class object in the candidate object group.

3. The method according to claim 1 or 2, further comprising:

determining that training of the neural network is completed in response to that the group correlation loss is less than a preset loss value.

4. The method according to any one of claims 1 to 3, wherein detecting the
5 first-class object and the second-class object in the image comprises:

extracting a feature map of the image; and

determining the first-class object and the second-class object in the image
based on the feature map;

determining the matching degree between the first-class object and each
10 second-class object in the same candidate object group based on the neural network
comprises:

determining a first feature of the first-class object based on the feature map;

obtaining a second feature set corresponding to the first feature by determining
a second feature of each second-class object in the candidate object group based on
15 the feature map;

obtaining an assemble feature set by assembling each second feature in the
second feature set with the first feature respectively; and

determining the matching degree between the second-class object and the
first-class object corresponding to an assemble feature in the assemble feature set
20 based on the neural network.

5. The method according to any one of claims 1 to 4, wherein the first-class
object comprises a first human body part object, and the second-class object
comprises a human body object; or the first-class object comprises a human body
object, and the second-class object comprises a first human body part object.

6. The method according to claim 5, wherein the first human body part object comprises a human face object or a human hand object.

7. The method according to any one of claims 1 to 6, further comprising:

detecting a third-class object in the image;

5 generating the at least one candidate object group based on the detected first-class object and the detected second-class object comprises:

generating at least one candidate object group based on the detected first-class object, the detected second-class object and the detected third-class object, wherein each candidate object group further comprises at least two said third-class objects;

10 the method further comprises: determining a matching degree between the first-class object and each third-class object in the same candidate object group based on the neural network; and

the group correlation loss being further positively correlated with the matching degree between the first-class object and a third-class object non-correlated with the
15 first-class object.

8. The method according to claim 7, wherein the third-class object comprises a second human body part object.

9. A method of detecting correlated objects, comprising:

detecting a first-class object and a second-class object in an image;

20 generating at least one object group based on the detected first-class object and the detected second-class object, wherein the object group comprises one said first-class object and at least two said second-class objects;

determining a matching degree between the first-class object and each second-class object in the same object group based on the neural network trained by

the method according to any one of claims 1-8; and

determining a second-class object correlated with the first-class object based on the matching degree between the first-class object and each second-class object in the same object group.

5 10. The method according to claim 9, wherein generating the at least one object group based on the detected first-class object and the detected second-class object comprises:

performing a combination operation for the detected first-class object;

wherein the combination operation comprises:

10 combining the first-class object and any at least two said second-class objects into one object group; or combining the first-class object and each said second-class object into one object group.

15 11. The method according to claim 9 or 10, wherein generating the at least one object comprises:

determining at least two second-class objects satisfying a preset relative position relationship with the first-class object as candidate correlated objects of the first-class object based on position information of the detected first-class object and the detected second-class object; and

20 combining the first-class object and each candidate correlated object of the first-class object into one object group.

12. The method according to claim 9 or 10, wherein the first-class object comprises a first human body part object, and the second-class object comprises a human body object; or the first-class object comprises a human body object, and the

second-class object comprises a first human body part object.

13. The method according to claim 12, wherein the first human body part object comprises a human face object or a human hand object.

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

5 detecting a third-class object in the image;

generating at least one object group based on the detected first-class object and the detected second-class object comprises:

generating at least one object group based on the detected first-class object, the detected second-class object and the detected third-class object, wherein the object
10 group further comprises at least two said third-class objects;

the method further comprising:

determining a matching degree between the first-class object and each third-class object in the same object group; and

determining a third-class object correlated with the first-class object based on
15 the matching degree between the first-class object and each third-class object in the same object group.

15. The method according to claim 14, wherein the third-class object comprises a second human body part object.

16. An apparatus for detecting correlated objects, comprising:

20 a detecting module, configured to detect a first-class object and a second-class object in an image;

an object group generating module, configured to generate at least one object group based on the detected first-class object and the detected second-class object, wherein the object group comprises one said first-class object and at least two said

second-class objects;

a determining module, configured to determine a matching degree between the first-class object and each second-class object in the same object group based on the neural network trained by the method according to any one of claims 1-8; and

5 a correlated object determining module, configured to determine a second-class object correlated with the first-class object based on the matching degree between the first-class object and each second-class object in the same object group.

17. A computer device, comprising a memory, a processor and computer programs that are stored on the memory and operable on the processor, wherein the
10 programs are executed by the processor to implement the method according to any one of claims 1 to 15.

18. A computer readable storage medium storing computer programs thereon, wherein the programs are executed by the processor to implement the method according to any one of claims 1 to 15.

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