

CLAIMS

1. A computer-implemented method for training a neural network, wherein the method is executed by one or more processors using instructions stored in a memory, wherein the method comprises:

obtaining a first sample subset from a sample set, wherein the sample set comprises M groups of support samples, and the first sample subset comprises a first support sample and a first query sample;

inputting the first sample subset into a first neural network, wherein the first neural network generates first feature information of the first query sample, wherein the first support sample is selected from a first group, and the first group is one of the M groups, and obtaining a first prediction result that corresponds to the first query sample and that is output by the first neural network, wherein the first prediction result is generated based on a similarity between feature information of the first support sample and the first feature information;

generating a second prediction result corresponding to the first query sample based on second feature information corresponding to the M groups of support samples, first labeling results corresponding to the M groups of support samples, and the first feature information of the first query sample, wherein each of the first labeling results indicates a correct result corresponding to one of the M groups of support samples; and

training the first neural network based on a first loss function and a second loss function, until a preset condition is met, wherein

the first loss function indicates a similarity between the first prediction result and a second labeling result, the second loss function indicates a similarity between the first prediction result and the second prediction result, or, the second loss function indicates a similarity between the second prediction result and the second labeling result, and the second labeling result is a correct result of the first query sample.

2. The method according to claim 1, wherein after the inputting the first sample subset into the first neural network, the method further comprises: generating the feature information of the first support sample by using the first neural network

adding the feature information of the first support sample to a first queue of a feature information base, wherein the feature information base comprises M queues in one-to-one correspondence with the M groups of support samples, the first queue is a queue corresponding to the first group in the M queues, and is configured to store feature information corresponding to the first group of support samples; and

before the generating a second prediction result corresponding to the first query sample based on second feature information corresponding to the M groups of support samples, first labeling results corresponding to the M groups of support samples, and the first feature information, the method further comprises:

obtaining the second feature information corresponding to the M groups of support samples based on the feature information base.

3. The method according to claim 2, wherein a second queue is any queue in the M queues, the second queue comprises feature information of at least one support sample, and the obtaining the second feature information corresponding to the M groups of support samples based on the feature information base comprises:

averaging the feature information of all the support samples comprised in the second queue, to obtain one piece of second feature information corresponding to the second queue.

4. The method according to claim 1, wherein the generating the second prediction result corresponding to the first query sample based on second feature information corresponding to the M groups of support samples, first labeling results corresponding to the M groups of support samples, and the first feature information comprises:

performing a similarity calculation operation based on the second feature information and the first feature information, to obtain first similarity information, wherein the first similarity information indicates a similarity between the first query sample and each of the M groups of support samples; and

generating the second prediction result based on the first similarity information and the first labeling results.

5. The method according to any one of claims 1 to 4, wherein the first neural network is a neural network that classifies samples, the first sample subset comprises N categories of first support samples, and the first prediction result indicates a predicted category of the first query sample in the N categories; and

the generating a second prediction result corresponding to the first query sample based on second feature information corresponding to the M groups of support samples, first labeling results corresponding to the M groups of support samples, and the first feature information of the first query sample comprises:

generating a first classification category based on the second feature information corresponding to the M groups of support samples, the first labeling results corresponding to the M groups of support samples, and the first feature information of the first query sample, wherein the first classification category indicates a predicted category of the first query sample in M categories; and

obtaining the second prediction result from the first classification category, wherein the second prediction result indicates the predicted category of the first query sample in the N categories.

6. The method according to any one of claims 1 to 4, wherein the first neural network is a neural network that performs regression on samples.

7. The method according to claim 6, wherein a grouping basis of the M groups is one or more of the following: users, locations, or time corresponding to the support samples.

8. The method according to claim 6, wherein at least one first support sample comprised in the first sample subset comes from a same group of the M groups, and at least one first query sample comprised in the first sample subset comes from a same group of the M groups.

9. The method according to any one of claims 1 to 4, wherein the first neural network is any one of the following neural networks: a fully-connected neural network, a convolutional neural network, or a residual neural network.

10. A computer-implemented sample processing method, wherein the method is executed by one or more processors using instructions stored in a memory, wherein the method comprises:

obtaining a third support sample and a third query sample; and

inputting the third support sample and the third query sample into a first neural network, to obtain a third prediction result that corresponds to the third query sample and that is output by the first neural network, wherein the third support sample is selected from a third group, and the third group is one of the M groups, wherein the third prediction result is generated based on a similarity between feature information of the third support sample and feature information of the third query sample, wherein

the first neural network is obtained through training based on a first loss function and a second loss function, the first loss function indicates a similarity between the prediction result output by the first neural network and a correct result, the second loss function indicates a similarity between the prediction result output by the first neural network and a second prediction result corresponding to the third query sample, or, the second loss function indicates a similarity between the second prediction result and the correct result, wherein the second prediction result is obtained based on second feature information corresponding to M groups of support samples, correct results corresponding to the M groups of support samples, and the feature information of the third query sample, the third support sample can belong to a third group of support samples, the third query sample can belong to a third group of query samples, and the third group is one of the M groups.

11. A computer-implemented apparatus for training a neural network, wherein the apparatus comprises:

an obtaining module, configured to obtain a first sample subset from a sample set, wherein the

sample set comprises M groups of support samples, and the first sample subset comprises a first support sample and a first query sample;

an input module, configured to: input the first sample subset into a first neural network, wherein the first neural network generates first feature information of the first query sample, wherein the first support sample is selected from a first group, and the first group is one of the M groups, and obtain a first prediction result that corresponds to the first query sample and that is output by the first neural network, wherein the first prediction result is generated based on a similarity between feature information of the first support sample and the first feature information;

a generation module, configured to generate a second prediction result corresponding to the first query sample based on second feature information corresponding to the M groups of support samples, first labeling results corresponding to the M groups of support samples, and the first feature information of the first query sample, wherein each of the first labeling results indicates a correct result corresponding to one of the M groups of support samples; and

a training module, configured to perform iterative training on the first neural network based on a first loss function and a second loss function, until a preset condition is met, wherein

the first loss function indicates a similarity between the first prediction result and a second labeling result, the second loss function indicates a similarity between the first prediction result and the second prediction result, or, the second loss function indicates a similarity between the second prediction result and the second labeling result, and the second labeling result is a correct result of the first query sample.

12. The apparatus according to claim 11, wherein

the generation module is further configured to generate the feature information of the first support sample by using the first neural network; the apparatus further comprises an adding module, configured to add the feature information of the first support sample to a first queue of a feature information base, wherein the feature information base comprises M queues in one-to-one correspondence with the M groups of support samples, the first queue is a queue corresponding to the first group in the M queues, and is configured to store feature information corresponding to the first group of support samples; and

the obtaining module is further configured to obtain the second feature information corresponding to the M groups of support samples based on the feature information base.

13. The apparatus according to claim 12, wherein a second queue is any queue in the M queues, and the second queue comprises feature information of at least one support sample, and

the obtaining module is specifically configured to average the feature information of all the support samples comprised in the second queue, to obtain one piece of second feature information

corresponding to the second queue.

14. The apparatus according to claim 11, wherein the generation module is specifically configured to:

perform a similarity calculation operation based on the second feature information and the first feature information, to obtain first similarity information, wherein the first similarity information indicates a similarity between the first query sample and each of the M groups of support samples; and

generate the second prediction result based on the first similarity information and the first labeling results.

15. The apparatus according to any one of claims 11 to 14, wherein the first neural network is a neural network that classifies samples, the first sample subset comprises N categories of first support samples, and the first prediction result indicates a predicted category of the first query sample in the N categories; and

the generation module is specifically configured to:

generate a first classification category based on the second feature information corresponding to the M groups of support samples, the first labeling results corresponding to the M groups of support samples, and the first feature information of the first query sample, wherein the first classification category indicates a predicted category of the first query sample in M categories; and

obtain the second prediction result from the first classification category, wherein the second prediction result indicates the predicted category of the first query sample in the N categories.

16. The apparatus according to any one of claims 11 to 14, wherein the first neural network is a neural network that performs regression on samples.

17. The apparatus according to claim 16, wherein a grouping basis of the M groups is one or more of the following: users, locations, or time corresponding to the support samples.

18. The apparatus according to claim 16, wherein at least one first support sample comprised in the first sample subset comes from a same group of the M groups, and at least one first query sample comprised in the first sample subset comes from a same group of the M groups.

19. The apparatus according to any one of claims 11 to 14, wherein the first neural network is any one of the following neural networks: a fully-connected neural network, a convolutional neural network, or a residual neural network.

20. A computer-implemented sample processing apparatus, wherein the apparatus comprises:
an obtaining module, configured to obtain a third support sample and a third query sample; and
an input module, configured to input the third support sample and the third query sample into a first neural network, to obtain a third prediction result that corresponds to the third query sample and

that is output by the first neural network, wherein the third support sample is selected from a third group, and the third group is one of the M groups, wherein the third prediction result is generated based on a similarity between feature information of the third support sample and feature information of the third query sample, wherein

the first neural network is obtained through training based on a first loss function and a second loss function, the first loss function indicates a similarity between the prediction result output by the first neural network and a correct result, the second loss function indicates a similarity between the prediction result output by the first neural network and a second prediction result corresponding to the third query sample, or, the second loss function indicates a similarity between the second prediction result and the correct result, wherein the second prediction result is obtained based on second feature information corresponding to M groups of support samples, correct results corresponding to the M groups of support samples, and the feature information of the third query sample, the third support sample can belong to a third group of support samples, the third query sample can belong to a third group of query samples, and the third group is one of the M groups.