CLAIMS

1. A method for processing batch-normalized data, comprising:

inputting a plurality of sample data into a batch normalization (BN) layer in a target network to be trained for normalization to obtain a processing result of the BN layer, wherein the plurality of sample data are obtained by extracting features of a plurality of image data;

performing a shift adjustment of initial BN on the processing result of the BN layer according to a specified constant shift to obtain a processing result of a post-shifted BN layer; and

nonlinearly mapping the processing result of the post-shifted BN layer through a rectified linear unit (ReLU) of an activation layer, obtaining a loss function step by step and then carrying out back propagation to obtain a first target network.

2. The method according to claim 1, wherein the inputting a plurality of sample data into a BN layer in a target network to be trained for normalization to obtain a processing result of the BN layer comprises:

based on a mean value and a variance corresponding to the plurality of sample data, normalizing the plurality of sample data to obtain a normalization result; and

based on a scaling coefficient and a shift coefficient of the BN layer, linearly transforming the normalization result to obtain the processing result of the BN layer.

3. The method according to claim 1 or 2, wherein the performing a shift adjustment of initial BN on the processing result of the BN layer according to a specified constant shift to obtain a processing result of a post-shifted BN layer comprises:

setting the constant shift as a positive number, and performing the shift adjustment of initial BN through the constant shift to obtain the processing result of the post-shifted BN layer.

4. The method according to claim 1 or 2, wherein the performing a shift adjustment of initial BN on the processing result of the BN layer according to a specified constant shift to obtain a processing result of a post-shifted BN layer comprises:

setting the constant shift as a negative number, and performing the shift adjustment of initial BN through the constant shift to obtain the processing result of the post-shifted BN layer.

5. The method according to any one of claims 1 to 4, wherein the nonlinearly mapping the processing result of the post-shifted BN layer through a ReLU of an activation layer, obtaining a loss function step by step and then carrying out back propagation to obtain a first target network comprises:

after nonlinearly mapping the processing result of the post-shifted BN layer through the ReLU, entering a next layer for calculation to ultimately obtain the loss function; and

based on back propagation for the loss function, obtaining the first target network.

6. The method according to claim 3, wherein a value range of the constant shift is between 0.01 and 0.1.

7. The method according to claim 4, wherein a value range of the constant shift is between -0.1 and -0.01.

8. A method for image classification, comprising: acquiring image data; and

using the first target network obtained by the method for processing batch-normalized data according to any one of claims 1 to 7 to classify the image data, so as to obtain an image classification result.

9. A method for image detection,

comprising:acquiring image data; and

using the first target network obtained by the method for processing batch-normalized data according to any one of claims 1 to 7 to detect a target region in the image data, so as to obtain an image detection result.

10. A method for video processing,

comprising:acquiring a video image; and

using the first target network obtained by the method for processing batch-normalized data according to any one of claims 1 to 7 to perform at least one of the following video processing on the video image according to a preset processing strategy to obtain a video processing result: encoding, decoding or playback.

11. A device for processing batch-normalized data, comprising:

a normalizing unit, configured to input a plurality of sample data into a batch normalization (BN) layer in a target network to be trained for normalization to obtain a processing result of the BN layer, wherein the plurality of sample data are obtained by extracting features of a plurality of image data;

a shift unit, configured to perform a shift adjustment of initial BN on the processing result of the BN layer according to a specified constant shift to obtain a processing result of a post-shifted BN layer; and

a processing unit, configured to nonlinearly map the processing result of the post-shifted BN layer through a rectified linear unit (ReLU) of an activation layer, obtain a loss function step by step and then carry out back propagation to obtain a first target network.

12. The device according to claim 11, wherein the normalizing unit is configured for:

based on a mean value and a variance corresponding to the plurality of sample data, normalizing the plurality of sample data to obtain a normalization result; and

based on a scaling coefficient and a shift coefficient of the BN layer, linearly transforming the normalization result to obtain the processing result of the BN layer.

13. The device according to claim 11 or 12, wherein the shift unit is configured for:

setting the constant shift as a positive number, and performing the shift adjustment of initial BN through the constant shift to obtain the processing result of the post-shifted BN layer,

or,

setting the constant shift as a negative number, and performing the shift adjustment of initial BN through the constant shift to obtain the processing result of the post-shifted BN layer.

14. The device according to any one of claims 11 to 13, wherein the processing unit is configured for:

after nonlinearly mapping the processing result of the post-shifted BN layer through the ReLU, entering a next layer for calculation to ultimately obtain the loss function; and

based on back propagation for the loss function, obtaining the first target network.

15. The device according to claim 13, wherein a value range of the constant shift is between 0.01nd 0.1, or, a value range of the constant shift is between -0.1 and -0.01.

16. A device for image classification, comprising:

a first acquiring unit, configured to acquire image data; and

a first processor, configured to use the first target network obtained by the method for processing batch-normalized data according to any one of claims 1 to 7 to classify the image data, so as to obtain an image classification result.

17. A device for image detection, comprising:

a second acquiring unit, configured to acquire image data; and

a second processor, configured to use the first target network obtained by the method for processing batch-normalized data according to any one of claims 1 to 7 to detect a target region in the image data, so as to obtain an image detection result.

18. A device for video processing, comprising:

a third acquiring unit, configured to acquire a video image; and

a third processor, configured to use the first target network obtained by the method for processing batch-normalized data according to any one of claims 1 to 7 to perform at least one of the following video processing on the video image according to a preset processing strategy to obtain a video processing result: encoding, decoding or playback.

19. An electronic device,

comprising:a processor, and

a memory configured to store an instruction executable by the processor, wherein

the processor is configured to execute the method according to any one of claims 1 to 7, claim 8, claim 9 and claim 10.

20. A computer-readable storage medium, having stored thereon a computer program instruction that, when executed by a processor, causes the processor to perform the method according to any one of claims 1 to 7, claim 8, claim 9 and claim 10.