WHAT IS CLAIMED IS:

1. A method for estimating the depth of a binocular image, comprising:

inputting a to-be-processed binocular image into a predetermined neural network to obtain a parallax image and a confidence score image of the parallax image, wherein a discrete parameter of each pixel in a preset distribution in the parallax image has a negative correlation with a confidence score of the pixel; and

obtaining a depth image of the to-be-processed binocular image according to the parallax image.

2. The method according to claim 1, wherein the inputting a left view and a right view of a to-be-processed binocular image into a predetermined neural network to obtain a confidence score image comprises:

processing the to-be-processed binocular image by a binocular stereo matching neural network, and then by two convolution layers and one normalization layer sequentially to obtain the confidence score image.

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

training the predetermined neural network by using a loss function, wherein the loss function is calculated from the confidence score of each pixel in the parallax image and the discrete parameter of the pixel in the preset distribution.

4. The method according to claim 3, wherein the loss function comprises: regularization terms and a focus loss term that adjusts a weight of each pixel in the parallax image in the loss function.

5. The method according to claim 4, wherein the regularization terms comprise: a regularization term related to the confidence score and a regularization term related to a predetermined neural network parameter.

6. The method according to any one of claims 3 to 5, wherein calculating the loss function from the confidence score of each pixel in the parallax image and the discrete parameter of the pixel in the preset distribution comprises:

obtaining, based on the parallax image and the confidence score image of the parallax image as well as a predetermined neural network parameter and a real parallax image, a likelihood function related to the predetermined neural network parameter;

obtaining the negative correlation between the discrete parameter of each pixel in the preset distribution in the parallax image and the confidence score of the pixel based on the preset distribution to which each pixel in the parallax image conforms; and

in response to the predetermined neural network parameter conforming to the preset distribution and the confidence score of each pixel in the parallax image conforming to a non-decreasing distribution, taking, based on the negative correlation between the discrete parameter of each pixel in the preset distribution in the parallax image and the confidence score of the pixel, a negative logarithm of the likelihood function to obtain the loss function.

7. The method according to any one of claims 3 to 6, wherein the preset distribution comprises a Laplacian distribution or a Gaussian distribution.

8. The method according to claim 7, wherein in response to the preset distribution being the Laplacian distribution, the loss function comprises: a focus loss term obtained from an average value of ratios, each being a ratio of an absolute value of a difference between a parallax value of each of pixels in the parallax image and a parallax value of a respective one of pixels in the real parallax image to the confidence score of the pixel, a regularization term obtained from an average value of confidence scores of the pixels in the parallax image, and a regularization term obtained from the predetermined neural network parameter.

9. The method according to claim 7, wherein in response to the preset distribution being the Gaussian distribution, the loss function comprises: a focus loss term obtained from an average value of ratios, each being a ratio of a square of a difference between a parallax value of each of pixels in the parallax image and a parallax value of a respective one of pixels in the

real parallax image to the confidence score of the pixels, a regularization term obtained from an average value of confidence scores of the pixels in the parallax image, and a regularization term obtained from the predetermined neural network parameter.

10. An apparatus for estimating the depth of a binocular image, comprising:

a parallax image acquiring unit, configured to input a to-be-processed binocular image into a predetermined neural network to obtain a parallax image and a confidence score image of the parallax image, wherein a discrete parameter of each pixel in a preset distribution in the parallax image has a negative correlation with a confidence score of the pixel; and

a depth image acquiring unit, configured to obtain a depth image of the to-be-processed binocular image according to the parallax image.

11. The apparatus according to claim 10, wherein the parallax image acquiring unit is configured to process the to-be-processed binocular image by a binocular stereo matching neural network, and then by two convolution layers and one normalization layer sequentially to obtain the confidence score image.

12. The apparatus according to claim 10 or 11, further comprising:

a neural network training unit, configured to train the predetermined neural network by using a loss function, wherein the loss function is calculated from the confidence score of each pixel in the parallax image and the discrete parameter of the pixel in the preset distribution.

13. The apparatus according to claim 12, wherein the loss function comprises: regularization terms and a focus loss term that adjusts a weight of each pixel in the parallax image in the loss function.

14. The apparatus according to claim 13, wherein the regularization terms comprise: a regularization term related to the confidence score and a regularization term related to a predetermined neural network parameter.

15. The apparatus according to any one of claims 12 to 14, wherein the neural network training unit comprises a loss function acquiring module; and

the loss function acquiring module is configured to: obtain, based on the parallax image and the confidence score image of the parallax image as well as a predetermined neural network parameter and a real parallax image, a likelihood function related to the predetermined neural network parameter; obtain the negative correlation between the discrete parameter of each pixel in the preset distribution in the parallax image and the confidence score of the pixel based on the preset distribution to which each pixel in the parallax image conforms; and in response to the predetermined neural network parameter conforming to the preset distribution and the confidence score of each pixel in the parallax image conforming to a non-decreasing distribution, take, based on the negative correlation between the discrete parameter of each pixel in the preset distribution in the parallax image and the confidence score of the pixel, a negative logarithm of the likelihood function to obtain the loss function.

16. The apparatus according to any one of claims 12 to 15, wherein the preset distribution comprises a Laplacian distribution or a Gaussian distribution.

17. The apparatus according to claim 16, wherein in response to the preset distribution being the Laplacian distribution, the loss function comprises: a focus loss term obtained from an average value of ratios, each being a ratio of an absolute value of a difference between a parallax value of each of pixels in the parallax image and a parallax value of a respective one of pixels in the real parallax image to the confidence score of the pixels, a regularization term obtained from an average value of confidence scores of the pixels in the parallax image, and a regularization term obtained from the predetermined neural network parameter.

18. An electronic device, comprising:

a memory, configured to store executable instructions; and

a processor, configured to execute the executable instructions so as to complete the method according to any one of claims 1 to 9.

19. A computer program, comprising a computer-readable code, wherein when the computer-readable code runs on a device, a processor in the device executes instructions for implementing the method according to any one of claims 1 to 9.

20. A computer storage medium configured to store computer readable instructions, wherein when the instructions are executed, the method according to any one of claims 1 to 9 is implemented.