

CLAIMS

1. A method for image processing, comprising:

performing human shape detection for a target image to obtain a human shape detection result, the target image being acquired in a present scene in real time;

determining a region of interest in the target image according to the human shape detection result of the target image; and

determining, based on brightness distribution in the region of interest, a target parameter value for image acquisition in the present scene.

2. The method of claim 1, wherein determining the region of interest in the target image according to the human shape detection result of the target image comprises:

in response to that the human shape detection result indicates that there is a face region in the target image, determining the region of interest in the target image according to the face region in the target image.

3. The method of claim 2, wherein determining the region of interest in the target image according to the face region in the target image comprises:

in response to that there are a plurality of face regions in the target image, determining a largest face region among the plurality of face regions; and

determining the largest face region as the region of interest in the target image.

4. The method of claim 1, wherein determining the region of interest in the target image according to the human shape detection result of the target image comprises:

in response to that the human shape detection result indicates that there is no face region in the target image, determining a central image region of the target image; and

determining the central image region as the region of interest in the target image.

5. The method of claim 1, after determining the region of interest in the target image according to the human shape detection result of the target image and before determining, based on the brightness distribution in the region of interest, the target parameter value for image acquisition in the present scene, the method further comprises:

determining the brightness distribution in the region of interest according to a brightness of each pixel in the region of interest in the target image.

6. The method of any one of claims 1-5, wherein determining, based on the brightness distribution in the region of interest, the target parameter value for image acquisition in the present scene comprises:

determining an average brightness in the region of interest;

determining a boundary brightness of the region of interest according to the brightness distribution in the region of interest;

determining a target brightness for the region of interest according to the average brightness in the region of interest and the boundary brightness of the region of interest; and

determining the target parameter value corresponding to the target brightness based on a mapping relationship between a brightness and an image acquisition parameter.

7. The method of claim 6, wherein determining the average brightness in the region of interest comprises:

determining a weight corresponding to each pixel in the region of interest; and

determining the average brightness in the region of interest, according to one or more weights corresponding to all pixels in the region of interest and brightnesses of all the pixels in the region of interest.

8. The method of claim 7, wherein determining the weight corresponding to each pixel in the region of interest comprises:

determining the weight corresponding to each pixel in the region of interest according to a distance between the pixel in the region of interest and a region center of the region of interest, wherein the distance between the pixel in the region of interest and the region center of the region of interest is positively correlated to the weight corresponding to the pixel.

9. The method of claim 6, wherein determining the boundary brightness of the region of interest according to the brightness distribution in the region of interest comprises:

determining, in the brightness distribution in the region of interest, a number of corresponding pixels within a brightness reference value range, wherein the brightness reference value range is a brightness range from a minimum brightness value to a brightness reference value in the brightness distribution, and the brightness reference value is a brightness value in the brightness distribution;

determining a pixel ratio of the number of corresponding pixels within the brightness reference value range to a total number of pixels in the region of interest; and

in response to that the pixel ratio is greater than or equal to a preset ratio, determining the brightness reference value as the boundary brightness of the region of interest.

10. The method of claim 6, wherein determining the target brightness for the region of interest according to the average brightness in the region of interest and the boundary brightness of

the region of interest comprises:

obtaining a preset expected boundary brightness;

determining a ratio of the expected boundary brightness to the boundary brightness of the region of interest; and

determining the target brightness for the region of interest according to the ratio of the expected boundary brightness to the boundary brightness of the region of interest and the average brightness in the region of interest.

11. The method of any one of claims 1-5 or 7-10, further comprising:

performing image acquisition in the present scene by use of the target parameter value.

~~12. The method of claim 11, wherein the target parameter value comprises at least one of:~~

~~an exposure value;~~

~~an exposure duration; or~~

~~a gain.~~

~~13~~12. A device for image processing, comprising:

a detection module, configured to perform human shape detection for a target image to obtain a human shape detection result, the target image being acquired in a present scene in real time;

a first determination module, configured to determine a region of interest in the target image according to the human shape detection result of the target image; and

a second determination module, configured to determine, based on brightness

distribution in the region of interest, a target parameter value for image acquisition in the present scene.

1413. The device of claim **1312**, wherein the first determination module is further configured to:

in response to that the human shape detection result indicates that there is a face region in the target image, determine the region of interest in the target image according to the face region in the target image.

1514. The device of claim **1413**, wherein the first determination module is further configured to:

in response to that there are a plurality of face regions in the target image, determine a largest face region among the plurality of face regions; and

determine the largest face region as the region of interest in the target image.

1615. The device of claim **1312**, wherein the first determination module is further configured to:

in response to that the human shape detection result indicates that there is no face region in the target image, determine a central image region of the target image; and

determine the central image region as the region of interest in the target image.

1716. The device of claim **1312**, wherein the first determination module is further configured to:

after the region of interest in the target image is determined according to the human shape detection result of the target image and before the target parameter value for image acquisition in the present scene is determined based on the brightness distribution in the region of interest, determine the brightness distribution in the region of interest according to a brightness of each pixel in the region of interest in the target image.

~~1817~~. The device of any one of claims ~~13-17~~12-16, wherein the second determination module is further configured to:

determine an average brightness in the region of interest;

determine a boundary brightness of the region of interest according to the brightness distribution in the region of interest;

determine a target brightness for the region of interest according to the average brightness in the region of interest and the boundary brightness of the region of interest; and

determine the target parameter value corresponding to the target brightness based on a mapping relationship between a brightness and an image acquisition parameter.

~~1918~~. The device of claim ~~1817~~, wherein ~~the second determination module is further configured to:~~

the second determination module is further configured to: determine a weight corresponding to each pixel in the region of interest; and

determine the average brightness in the region of interest, according to one or more weights corresponding to all pixels in the region of interest and brightnesses of all the pixels in the region of interest; or

the second determination module is further configured to:: determine, in the brightness distribution in the region of interest, a number of corresponding pixels within a brightness reference value range, wherein the brightness reference value range is a brightness range from a minimum brightness value to a brightness reference value in the brightness distribution, and the brightness reference value is a brightness value in the brightness distribution; determine a pixel ratio of the number of corresponding pixels within the brightness reference value range to a total number of pixels in the region of interest; and in response to that the pixel ratio is greater than or equal to a preset ratio, determine the brightness reference value as the boundary brightness of the region of interest; or

the second determination module is further configured to: obtain a preset expected boundary brightness; determine a ratio of the expected boundary brightness to the boundary brightness of the region of interest; and determine the target brightness for the region of interest according to the ratio of the expected boundary brightness to the boundary brightness of the region of interest and the average brightness in the region of interest.

~~20. The device of claim 19, wherein the second determination module is further configured to:~~

~~determine the weight corresponding to each pixel in the region of interest according to a distance between the pixel in the region of interest and a region center of the region of interest, wherein the distance between the pixel in the region of interest and the region center of the region of interest is positively correlated to the weight corresponding to the pixel.~~

~~21. The device of claim 18, wherein the second determination module is further configured to:~~

~~determine, in the brightness distribution in the region of interest, a number of corresponding pixels within a brightness reference value range, wherein the brightness reference value range is a brightness range from a minimum brightness value to a brightness reference value in the brightness distribution, and the brightness reference value is a brightness value in the brightness distribution;~~

~~determine a pixel ratio of the number of corresponding pixels within the brightness reference value range to a total number of pixels in the region of interest; and~~

~~in response to that the pixel ratio is greater than or equal to a preset ratio, determine the brightness reference value as the boundary brightness of the region of interest.~~

22. The device of claim 18, wherein the second determination module is further configured to:

~~obtain a preset expected boundary brightness;~~

~~determine a ratio of the expected boundary brightness to the boundary brightness of the region of interest; and~~

~~determine the target brightness for the region of interest according to the ratio of the expected boundary brightness to the boundary brightness of the region of interest and the average brightness in the region of interest.~~

23. The device of any one of claims 13-16 or 19-22, further comprising:

~~an acquisition module, configured to perform image acquisition in the present scene by use of the target parameter value.~~

24. The device of claim 23, wherein the target parameter value comprises at least one of:

~~an exposure value;~~

~~an exposure duration; or~~

~~a gain.~~

~~25~~19. An electronic device, comprising:

a processor; and

a memory configured to store instructions executable for the processor.

wherein the processor is configured to call the instructions stored in the memory to execute the method of any one of claims 1-~~12~~11.

~~26~~20. A computer-readable storage medium having stored thereon computer program instructions that, when being executed by a processor, cause the processor to implement the method of any one of claims 1-~~12~~11.