CLAIMS

1. A method for adjusting image luminance, comprising:

determining a target pixel with luminance lower than a luminance threshold in an original image, the luminance threshold being a threshold determined according to luminance of pixels in the original image;

obtaining a luminance distribution intensity of pixels adjacent to the target pixel in the original image, wherein the luminance distribution intensity is a luminance average of the adjacent pixels, reflecting the luminance of the adjacent pixels,

wherein the obtaining comprises:

generating a second image corresponding to the original image by using a Mipmap function of a graphics processing unit (GPU) graphics pipeline, a resolution of the second image being less than a resolution of the original image,

obtaining a first position of the target pixel on the original image,

determining a second position corresponding to the first position on the second image, and

determining luminance of a pixel located at the second position on the second image as the luminance distribution intensity of the adjacent pixels;

determining a difference between the luminance threshold and the luminance distribution intensity of the adjacent pixels; and

adjusting the target pixel to corresponding target luminance according to the difference and original luminance of the target pixel,

wherein the adjusting comprises:

determining a target luminance adjustment curve corresponding to the difference; and

adjusting the original luminance of the target pixel to the target luminance shown on the target luminance adjustment curve according to the target luminance adjustment curve;

wherein the determining a target luminance adjustment curve corresponding to the difference comprises:

determining an adjustment intensity corresponding to the target pixel according to the difference, wherein the greater the difference is, the greater the adjustment intensity is; and

determining the target luminance adjustment curve according to the adjustment intensity and

the luminance threshold;

wherein the determining an adjustment intensity corresponding to the target pixel according to the difference comprises: determining the adjustment intensity by using the following formula:

$$S = (T - La) * k,$$

wherein S is the adjustment intensity, T is the luminance threshold, La is the luminance distribution intensity of the adjacent pixels, and k is a constant factor; and

the determining the target luminance adjustment curve according to the adjustment intensity and the luminance threshold comprises: determining the target luminance adjustment curve by using the following formula:

$$L' = Lc + S * \sin(PI * Lc / T),$$

wherein L' is the target luminance adjustment curve, Lc is the original luminance, and PI is the constant π.

2. The method according to claim 1, wherein the determining a difference between the luminance threshold and the luminance distribution intensity of the adjacent pixels comprises:

determining the difference between the luminance threshold and the luminance distribution intensity of the adjacent pixels in response to that the luminance distribution intensity is lower than the luminance threshold.

3. The method according to claim 2, wherein after the obtaining a luminance distribution intensity of pixels adjacent to the target pixel in the original image, the method further comprises:

canceling luminance adjustment of the target pixel in response to that the luminance distribution intensity is higher than the luminance threshold.

4. The method according to any one of claims 1 to 3, wherein the luminance threshold is a threshold determined according to a luminance average of the pixels in the original image.

5. The method according to claim 4, wherein before the determining a target pixel with luminance lower than a luminance threshold in an original image, the method further comprises:

determining the luminance average of the pixels in the original image by using the Mipmap function of the GPU graphics pipeline; and

determining the luminance threshold according to the luminance average of the pixels in the original image, wherein the greater the luminance average is, the greater the luminance threshold is.

6. The method according to claim 5, wherein the determining the luminance average of the

pixels in the original image by using the Mipmap function of the GPU graphics pipeline comprises:

generating a first image corresponding to the original image by using the Mipmap function, a resolution of the first image being 1×1; and

determining luminance of the first image as the luminance average of the pixels in the original image.

7. An apparatus for adjusting image luminance, comprising:

a first determining module, configured to determine a target pixel with luminance lower than a luminance threshold in an original image, the luminance threshold being a threshold determined according to luminance of pixels in the original image;

an obtaining module, configured to obtain a luminance distribution intensity of pixels adjacent to the target pixel in the original image, wherein the luminance distribution intensity is a luminance average of the adjacent pixels, reflecting the luminance of the adjacent pixels;

a second determining module, configured to determine a difference between the luminance threshold and the luminance distribution intensity of the adjacent pixels;

an adjustment module, configured to adjust the target pixel to corresponding target luminance according to the difference and original luminance of the target pixel; and

a third determining module, configured to determine a target luminance adjustment curve corresponding to the difference,

wherein the adjustment module is configured to adjust the original luminance of the target pixel to the target luminance shown on the target luminance adjustment curve according to the target luminance adjustment curve;

wherein the obtaining module comprises:

a second generation unit, configured to generate a second image corresponding to the original image by using a Mipmap function of a graphics processing unit (GPU) graphics pipeline, a resolution of the second image being less than a resolution of the original image,

an obtaining unit, configured to obtain a first position of the target pixel on the original image,

a fourth determining unit, configured to determine a second position corresponding to the first position on the second image, and

a fifth determining unit, configured to determine luminance of a pixel located at the second position on the second image as the luminance distribution intensity of the adjacent pixels;

wherein the third determining module comprises:

a first determining unit, configured to determine an adjustment intensity corresponding to the target pixel according to the difference, wherein the greater the difference is, the greater the adjustment intensity is; and

a second determining unit, configured to determine the target luminance adjustment curve according to the adjustment intensity and the luminance threshold,

wherein

the first determining unit is configured to determine the adjustment intensity by using the following formula:

$$S = (T - La) * k,$$

wherein S is the adjustment intensity, T is the luminance threshold, La is the luminance distribution intensity of the adjacent pixels, and k is a constant factor; and

the second determining unit is configured to determine the target luminance adjustment curve by using the following formula:

$$L' = Lc + S * \sin(PI * Lc / T),$$

wherein L' is the target luminance adjustment curve, Lc is the original luminance, and PI is the constant π.

8. The apparatus according to claim 7, wherein the luminance threshold is a threshold determined according to a luminance average of the pixels in the original image.

9. The apparatus according to claim 8, further comprising:

a fourth determining module, configured to determine the luminance average of the pixels in the original image by using the Mipmap function of the GPU graphics pipeline; and

a fifth determining module, configured to determine the luminance threshold according to the luminance average of the pixels in the original image, wherein the greater the luminance average is, the greater the luminance threshold is.

10. A storage medium, storing a computer program, the computer program being used for performing the method according to any one of claims 1 to 6 when being run.

11. An electronic device, comprising a memory and a processor, the memory storing a computer program, the processor being configured to perform the method according to any one of claims 1 to 6 by using the computer program.

12. A computer program product comprising instructions, the computer program product, when run on a computer, causing the computer to perform the method according to any one of claims 1 to 6.