CLAIMS

What is claimed is:

1. An image processing method, wherein the method comprises:

obtaining a first image;

performing feature extraction on the first image to obtain at least one first feature map, wherein the at least one first feature map comprises N first feature values, and N is a positive integer;

obtaining a target compression bit rate, wherein the target compression bit rate corresponds to M target gain values, each target gain value corresponds to one first feature value, and M is a positive integer less than or equal to N;

respectively processing corresponding first feature values based on the M target gain values to obtain M second feature values; and

performing quantization and entropy encoding on at least one processed first feature map to obtain encoded data, wherein the at least one processed first feature map comprises the M second feature values.

2. The method according to claim 1, wherein information entropy of quantized data obtained by quantizing the at least one processed first feature map meets a preset condition, and the preset condition is related to the target compression bit rate.

3. The method according to claim 2, wherein the preset condition comprises at least:

a larger target compression bit rate indicates larger information entropy of the quantized data.

4. The method according to any one of claims 1 to 3, wherein a difference between a compression bit rate corresponding to the encoded data and the target compression bit rate falls within a preset range.

5. The method according to any one of claims 1 to 4, wherein the M second feature values are obtained by separately performing a multiplication operation on the M target gain values and the corresponding first feature values.

6. The method according to any one of claims 1 to 5, wherein the at least one first feature map comprises a first target feature map, the first target feature map comprises P first feature values, all of the P first feature values correspond to a same target gain value, and P is a positive

integer less than or equal to M.

7. The method according to any one of claims 1 to 6, wherein the method further comprises:

determining, based on a target mapping relationship, the M target gain values corresponding to the target compression bit rate, wherein the target mapping relationship is used to indicate an association relationship between a compression bit rate and M target gain values, wherein

the target mapping relationship comprises a plurality of compression bit rates, a plurality of gain vectors, and association relationships between the plurality of compression bit rates and the plurality of gain vectors, the target compression bit rate is one of the plurality of compression bit rates, and the M target gain values are elements of one of the plurality of gain vectors; or

the target mapping relationship comprises a target function mapping relationship, and when an input of the target function relationship comprises the target compression bit rate, an output of the target function relationship comprises the M target gain values.

8. The method according to any one of claims 1 to 7, wherein the target compression bit rate is greater than a first compression bit rate and less than a second compression bit rate, the first compression bit rate corresponds to M first gain values, the second compression bit rate corresponds to M second gain values, and the M target gain values are obtained by performing an interpolation operation on the M first gain values and the M second gain values.

9. The method according to any one of claims 1 to 8, wherein the first image comprises a target object, and the M first feature values are feature values that are in the at least one feature map and that correspond to the target object.

10. The method according to any one of claims 1 to 9, wherein each of the M target gain values corresponds to one reverse gain value, the reverse gain value is used to process a feature value obtained in a decoding process of the encoded data, and a product of each of the M target gain values and the corresponding reverse gain value falls within a preset range.

11. An image processing method, wherein the method comprises:

obtaining encoded data;

performing entropy decoding on the encoded data to obtain at least one second feature map, wherein the at least one second feature map comprises N third feature values, and N is a positive integer;

obtaining M target reverse gain values, wherein each target reverse gain value corresponds to one third feature value, and M is a positive integer less than or equal to N;

respectively processing corresponding third feature values based on the M target reverse gain values, to obtain M fourth feature values; and

performing image reconstruction on at least one processed second feature map to obtain a second image, wherein the at least one processed second feature map comprises the M fourth feature values.

12. The method according to claim 11, wherein the M fourth feature values are obtained by separately performing a multiplication operation on the M target reverse gain values and the corresponding third feature values.

13. The method according to claim 11 or 12, wherein the at least one second feature map comprises a second target feature map, the second target feature map comprises P third feature values, all of the P third feature values correspond to a same target reverse gain value, and P is a positive integer less than or equal to M.

14. The method according to any one of claims 11 to 13, wherein the method further comprises:

obtaining a target compression bit rate; and

determining, based on a target mapping relationship, the M target reverse gain values corresponding to the target compression bit rate, wherein the target mapping relationship is used to indicate an association relationship between a compression bit rate and a reverse gain vector, wherein

the target mapping relationship comprises a plurality of compression bit rates, a plurality of reverse gain vectors, and association relationships between the plurality of compression bit rates and the plurality of reverse gain vectors, the target compression bit rate is one of the plurality of compression bit rates, and the M target reverse gain values are elements of one of the plurality of reverse gain vectors; or

the target mapping relationship comprises a target function mapping relationship, and when an input of the target function relationship comprises the target compression bit rate, an output of the target function relationship comprises the M target reverse gain values.

15. The method according to any one of claims 11 to 14, wherein the second image comprises a target object, and the M third feature values are feature values that are in the at least one feature map and that correspond to the target object.

16. The method according to any one of claims 11 to 15, wherein the target compression bit

rate is greater than a first compression bit rate and less than a second compression bit rate, the first compression bit rate corresponds to M first reverse gain values, the second compression bit rate corresponds to M second reverse gain values, and the M target reverse gain values are obtained by performing an interpolation operation on the M first reverse gain values and the M second reverse gain values.

17. An image processing apparatus, wherein the apparatus comprises:

an obtaining module, configured to obtain a first image;

a feature extraction module, configured to perform feature extraction on the first image to obtain at least one first feature map, wherein the at least one first feature map comprises N first feature values, and N is a positive integer, wherein

the obtaining module is further configured to obtain a target compression bit rate, wherein the target compression bit rate corresponds to M target gain values, each target gain value corresponds to one first feature value, and M is a positive integer less than or equal to N;

a gain module, configured to respectively process corresponding first feature values based on the M target gain values to obtain M second feature values; and

a quantization and entropy encoding module, configured to perform quantization and entropy encoding on at least one processed first feature map to obtain encoded data, wherein the at least one processed first feature map comprises the M second feature values.

18. The apparatus according to claim 17, wherein information entropy of quantized data obtained by quantizing the at least one processed first feature map meets a preset condition, and the preset condition is related to the target compression bit rate.

19. The apparatus according to claim 18, wherein the preset condition comprises at least:

a larger target compression bit rate indicates larger information entropy of the quantized data.

20. The apparatus according to any one of claims 17 to 19, wherein a difference between a compression bit rate corresponding to the encoded data and the target compression bit rate falls within a preset range.

21. The apparatus according to any one of claims 17 to 20, wherein the M second feature values are obtained by separately performing a multiplication operation on the M target gain values and the corresponding first feature values.

22. The apparatus according to any one of claims 17 to 21, wherein the at least one first

feature map comprises a first target feature map, the first target feature map comprises P first feature values, all of the P first feature values correspond to a same target gain value, and P is a positive integer less than or equal to M.

23. The apparatus according to any one of claims 17 to 22, wherein the apparatus further comprises:

a determining module, configured to determine, based on a target mapping relationship, the M target gain values corresponding to the target compression bit rate, wherein the target mapping relationship is used to indicate an association relationship between a compression bit rate and M target gain values, wherein

the target mapping relationship comprises a plurality of compression bit rates, a plurality of gain vectors, and association relationships between the plurality of compression bit rates and the plurality of gain vectors, the target compression bit rate is one of the plurality of compression bit rates, and the M target gain values are elements of one of the plurality of gain vectors; or

the target mapping relationship comprises a target function mapping relationship, and when an input of the target function relationship comprises the target compression bit rate, an output of the target function relationship comprises the M target gain values.

24. The apparatus according to any one of claims 17 to 23, wherein the target compression bit rate is greater than a first compression bit rate and less than a second compression bit rate, the first compression bit rate corresponds to M first gain values, the second compression bit rate corresponds to M second gain values, and the M target gain values are obtained by performing an interpolation operation on the M first gain values and the M second gain values.

25. The apparatus according to any one of claims 17 to 24, wherein the first image comprises a target object, and the M first feature values are feature values that are in the at least one feature map and that correspond to the target object.

26. The apparatus according to any one of claims 17 to 25, wherein each of the M target gain values corresponds to one reverse gain value, the reverse gain value is used to process a feature value obtained in a decoding process of the encoded data, and a product of each of the M target gain values and the corresponding reverse gain value falls within a preset range.

27. An image processing apparatus, wherein the apparatus comprises:

an obtaining module, configured to obtain encoded data;

a decoding module, configured to perform entropy decoding on the encoded data to obtain

at least one second feature map, wherein the at least one second feature map comprises N third feature values, and N is a positive integer, wherein

the obtaining module is further configured to obtain M target reverse gain values, wherein each target reverse gain value corresponds to one third feature value, and M is a positive integer less than or equal to N;

a reverse gain module, configured to respectively process corresponding third feature values based on the M target reverse gain values, to obtain M fourth feature values; and

a reconstruction module, configured to perform image reconstruction on at least one processed second feature map to obtain a second image, wherein the at least one processed second feature map comprises the M fourth feature values.

28. The apparatus according to claim 27, wherein the M fourth feature values are obtained by separately performing a multiplication operation on the M target reverse gain values and the corresponding third feature values.

29. The apparatus according to claim 27 or 28, wherein the at least one second feature map comprises a second target feature map, the second target feature map comprises P third feature values, all of the P third feature values correspond to a same target reverse gain value, and P is a positive integer less than or equal to M.

30. The apparatus according to any one of claims 27 to 29, wherein the obtaining module is further configured to obtain a target compression bit rate; and

the apparatus further comprises:

a determining module, configured to determine, based on a target mapping relationship, the M target reverse gain values corresponding to the target compression bit rate, wherein the target mapping relationship is used to indicate an association relationship between a compression bit rate and a reverse gain vector, wherein

the target mapping relationship comprises a plurality of compression bit rates, a plurality of reverse gain vectors, and association relationships between the plurality of compression bit rates and the plurality of reverse gain vectors, the target compression bit rate is one of the plurality of compression bit rates, and the M target reverse gain values are elements of one of the plurality of reverse gain vectors; or

the target mapping relationship comprises a target function mapping relationship, and when an input of the target function relationship comprises the target compression bit rate, an output of

the target function relationship comprises the M target reverse gain values.

31. The apparatus according to any one of claims 27 to 30, wherein the second image comprises a target object, and the M third feature values are feature values that are in the at least one feature map and that correspond to the target object.

32. The apparatus according to any one of claims 27 to 31, wherein the target compression bit rate is greater than a first compression bit rate and less than a second compression bit rate, the first compression bit rate corresponds to M first reverse gain values, the second compression bit rate corresponds to M second reverse gain values, and the M target reverse gain values are obtained by performing an interpolation operation on the M first reverse gain values and the M second reverse gain values.

33. An image processing device, comprising a ~~non-volatile~~ memory and a processor that are coupled to each other, wherein the processor invokes program code stored in the memory, to perform the method according to any one of claims 1 to 16.

34. A computer program comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause the processor to perform the method according to any one of claims 1 to 16.

35. A storage medium storing encoded data which is obtained by using an image processing method that using the method according to any one of claims 1 to 10.

36. A chip system comprising a processor and a memory, wherein the memory is configured to store program instructions, wherein when the program instructions are executed by the processor, causing the processor to perform the method according to any one of claims 1 to 16.

37. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program that can be executed by a processor, and when the computer program is executed by the processor, the processor performs the method according to any one of claims 1 to 16.