Amended Set of Claims 1 to 37

1. A method for coding video data, the method comprising:

determining a center value for a set of pixels, wherein the center value is based on values of the pixels;

dividing bands of pixel values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values, and wherein each group of the two or more groups of bands comprises one or more bands;

determining offset values for the bands based on the two or more groups of bands.

2. The method of claim 1, wherein the method is performed by a video decoder, and wherein determining the center value comprises receiving a syntax element, and wherein dividing the bands of pixel values into two or more groups of bands comprises determining the two or more groups of bands based on the syntax element, the method further comprising applying a sample adaptive offset (SAO) filter based on the offset values.

3. The method of claim 1, wherein the method is performed by a video encoder, and wherein the method further comprises:

generating a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

4. The method of claim 1, wherein determining the center value comprises determining a mean value for the set of pixels.

5. The method of claim 1, wherein determining the center value comprises determining a median value for the set of pixels.

6. The method of claim 1, wherein determining the center value comprises determining the pixel where the peak of a histogram lies.

7. The method of claim 1, wherein the set of pixels comprises a group of largest coding units (LCUs).

8. The method of claim 1, wherein determining offset values for the bands based on the two or more groups of bands comprises generating a band offset value for a band of a first group based on a second band offset of the first group.

9. The method of claim 1, wherein determining offset values for the bands based on the two or more groups of bands comprises generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

10. A video coding device, the video coding device comprising:

a video coder configured to determine a center value for a set of pixels, wherein the center value is based on values of the pixels; divide bands of pixels values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values and wherein each group of the two or more groups of bands comprises one or more bands; and, determine offset values for the bands based on the two or more groups of bands.

11. The video coding device of claim 10, wherein the video coder comprises a video decoder, and wherein the video coder is configured to

determine the center value by receiving a syntax element;

divide the bands of pixel values into two or more groups of bands by

determining the two or more groups of bands based on the syntax element; and,

apply a sample adaptive offset (SAO) filter based on the offset values.

12. The video coding device of claim 10, wherein the video coder comprises a video encoder, and wherein the video coder is further configured to generate a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

13. The video coding device of claim 10, wherein the video coder is configured to determine the center value based on a mean value for the set of pixels.

14. The video coding device of claim 10, wherein the video coder is configured to determine the center value based on a median value for the set of pixels.

15. The video coding device of claim 10, wherein the video coder is configured to determine the center value based on a pixel where the peak of a histogram lies.

16. The video coding device of claim 10, wherein the set of pixels comprises a group of largest coding units (LCUs).

17. The video coding device of claim 10, wherein the video coder is configured to determine the offset values for the bands based on the two or more groups of bands by generating a band offset value for a band of a first group based on a second band offset of the first group.

18. The video coding device of claim 10, wherein the video coder is configured to determine the offset values for the bands based on the two or more groups of bands by generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

19. The video coding device of claim 10, wherein the video coding device comprises at least one of:

an integrated circuit;

a microprocessor; and,

a wireless communication device that includes the video coder.

20. A computer-readable storage medium storing instructions operable to cause one or more processors to:

determine a center value for a set of pixels, wherein the center value is based on values of the pixels;

divide bands of pixels values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values and wherein each group of the two or more groups of bands comprises one or more bands;

determine offset values for the bands based on the two or more groups of bands.

21. The computer-readable storage medium of claim 20, wherein the one or more processors comprise a video decoder, and wherein the instructions cause the one or more processors to

determine the center value by receiving a syntax element;

divide the bands of pixel values into two or more groups of bands by

determining the two or more groups of bands based on the syntax element; and,

apply a sample adaptive offset (SAO) filter based on the offset values.

22. The computer-readable storage medium of claim 20, wherein the one or more processors comprise a video decoder, and wherein the computer-readable storage medium stores further instructions that cause the one or more processors to generate a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

23. The computer-readable storage medium of claim 20, wherein the instructions cause the one or more processors to determine the center value by determining a mean value for the set of pixels.

24. The computer-readable storage medium of claim 20, wherein the instructions cause the one or more processors to determine the center value by determining a median value for the set of pixels.

25. The computer-readable storage medium of claim 20, wherein the instructions cause the one or more processors to determine the center value by determining a pixel where the peak of a histogram lies.

26. The computer-readable storage medium of claim 20, wherein the set of pixels comprises a group of largest coding units (LCUs).

27. The computer-readable storage medium of claim 20, wherein the instructions cause the one or more processors to determine the offset values for the bands based on

the two or more groups of bands by generating a band offset value for a band of a first group based on a second band offset of the first group.

28. The computer-readable storage medium of claim 20, wherein the instructions cause the one or more processors to determine the offset values for the bands based on the two or more groups of bands by generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

29. An apparatus for coding video data, the apparatus comprising:

means for determining a center value for a set of pixels, wherein the center value is based on values of the pixels;

means for dividing bands of pixels values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values and wherein each group of the two or more groups of bands comprises one or more bands; and,

means for determining offset values for the bands based on the two or more groups of bands.

30. The apparatus of claim 29, wherein the apparatus comprises a video decoder, and wherein the means for determining the center value comprises means for receiving a syntax element and the means for dividing the bands of pixel values into two or more groups of bands comprises means for determining the two or more groups of bands based on the syntax element; and wherein the apparatus further comprises means for applying a sample adaptive offset (SAO) filter based on the offset values.

31. The apparatus of claim 29, wherein the apparatus comprises a video encoder, and wherein the apparatus further comprises:

means for generating a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

32. The apparatus of claim 29, wherein the means for determining the center value comprises means for determining a mean value for the set of pixels.

33. The apparatus of claim 29, wherein the means for determining the center value comprises means for determining a median value for the set of pixels.

34. The apparatus of claim 29, wherein the means for determining the center value comprises means for determining the pixel where the peak of a histogram lies.

35. The apparatus of claim 29, wherein the set of pixels comprises a group of largest coding units (LCUs).

36. The apparatus of claim 29, wherein the means for determining the offset values for the bands based on the two or more groups of bands comprises means for generating a band offset value for a band of a first group based on a second band offset of the first group.

37. The apparatus of claim 29, wherein the means for determining the offset values for the bands based on the two or more groups of bands comprises means for generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

CLAIMS

1. A method for coding video data, the method comprising:

determining that a sample adaptive offset (SAO) type for a set of pixels comprises a band classification offset type;

for a largest coding unit, determining a center value for the set of pixels in response to determining the SAO type for the set of pixels comprises the band classification offset type, wherein the center value is based on pixel values of the set of pixels;

dividing bands of pixel values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values, and wherein each group of the two or more groups of bands comprises one or more bands;

determining offset values for the bands based on the two or more groups of bands.

2. The method of claim 1, wherein the method is performed by a video decoder, and wherein determining the center value comprises receiving a syntax element, and wherein dividing the bands of pixel values into two or more groups of bands comprises determining the two or more groups of bands based on the syntax element, the method further comprising applying an SAO filter based on the offset values.

3. The method of claim 1, wherein the method is performed by a video encoder, and wherein the method further comprises:

generating a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

4. The method of claim 1, wherein determining the center value comprises determining a mean value for the set of pixels.

5. The method of claim 1, wherein determining the center value comprises determining a median value for the set of pixels.

6. The method of claim 1, wherein determining offset values for the bands based on the two or more groups of bands comprises generating a band offset value for a band of a first group based on a second band offset of the first group.

7. The method of claim 1, wherein determining offset values for the bands based on the two or more groups of bands comprises generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

8. A video coding device, the video coding device comprising:

a memory configured to store video data; and

a video coder configured to determine, for a largest coding unit, a center value for a set of pixels of the video data in response to determining that a sample adaptive offset (SAO) type for the set of pixels comprises a band classification offset type, wherein the center value is based on pixel values of the set of pixels; divide bands of pixels values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values and wherein each group of the two or more groups of bands comprises one or more bands; and, determine offset values for the bands based on the two or more groups of bands.

9. The video coding device of claim 8, wherein the video coder comprises a video decoder, and wherein the video coder is configured to:

determine the center value by receiving a syntax element;

divide the bands of pixel values into two or more groups of bands by determining the two or more groups of bands based on the syntax element; and,

apply an SAO filter based on the offset values.

10. The video coding device of claim 8, wherein the video coder comprises a video encoder, and wherein the video coder is further configured to generate a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

11. The video coding device of claim 8, wherein the video coder is configured to determine the center value based on a mean value for the set of pixels.

12. The video coding device of claim 8, wherein the video coder is configured to determine the center value based on a median value for the set of pixels.

13. The video coding device of claim 8, wherein the video coder is configured to determine the offset values for the bands based on the two or more groups of bands by generating a band offset value for a band of a first group based on a second band offset of the first group.

14. The video coding device of claim 8, wherein the video coder is configured to determine the offset values for the bands based on the two or more groups of bands by generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

15. The video coding device of claim 8, wherein the video coding device comprises at least one of:

an integrated circuit;

a microprocessor; or

a wireless communication device that includes the video coder, the wireless communication device comprising one or both of a camera configured to generate the video data or a display configured to display the video data.

16. A computer-readable storage medium storing instructions operable to cause one or more processors to:

determine that a sample adaptive offset (SAO) type for a set of pixels comprises a band classification offset type;

for a largest coding unit, determine a center value for a set of pixels in response to determining the SAO type for the set of pixels comprises a band classification offset type, wherein the center value is based on pixel values of the set of pixels;

divide bands of pixels values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of

pixel values and wherein each group of the two or more groups of bands comprises one or more bands; and

determine offset values for the bands based on the two or more groups of bands.

17. The computer-readable storage medium of claim 16, wherein the one or more processors comprise a video decoder, and wherein the instructions cause the one or more processors to

determine the center value by receiving a syntax element;

divide the bands of pixel values into two or more groups of bands by determining the two or more groups of bands based on the syntax element; and

apply an SAO filter based on the offset values.

18. The computer-readable storage medium of claim 16, wherein the one or more processors comprise a video decoder, and wherein the computer-readable storage medium stores further instructions that cause the one or more processors to generate a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

19. The computer-readable storage medium of claim 16, wherein the instructions cause the one or more processors to determine the center value by determining a mean value for the set of pixels.

20. The computer-readable storage medium of claim 16, wherein the instructions cause the one or more processors to determine the center value by determining a median value for the set of pixels.

21. The computer-readable storage medium of claim 16, wherein the instructions cause the one or more processors to determine the offset values for the bands based on the two or more groups of bands by generating a band offset value for a band of a first group based on a second band offset of the first group.

22. The computer-readable storage medium of claim 16, wherein the instructions cause the one or more processors to determine the offset values for the bands based on the

two or more groups of bands by generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

23. An apparatus for coding video data, the apparatus comprising:

means for determining that a sample adaptive offset (SAO) type for a set of pixels comprises a band classification offset type;

means for determining, for a largest coding unit, a center value for a set of pixels in response to determining the SAO type for the set of pixels comprises the band classification offset type, wherein the center value is based on pixel values of the set of pixels;

means for dividing bands of pixels values into two or more groups of bands based on the center value, wherein each band of the bands of pixel values comprises a range of pixel values and wherein each group of the two or more groups of bands comprises one or more bands; and,

means for determining offset values for the bands based on the two or more groups of bands.

24. The apparatus of claim 23, wherein the apparatus comprises a video decoder, and wherein the means for determining the center value comprises means for receiving a syntax element and the means for dividing the bands of pixel values into two or more groups of bands comprises means for determining the two or more groups of bands based on the syntax element; and wherein the apparatus further comprises means for applying an SAO filter based on the offset values.

25. The apparatus of claim 23, wherein the apparatus comprises a video encoder, and wherein the apparatus further comprises:

means for generating a syntax element for inclusion in an encoded bitstream, wherein the syntax element indicates the center value.

26. The apparatus of claim 23, wherein the means for determining the center value comprises means for determining a mean value for the set of pixels.

27. The apparatus of claim 23, wherein the means for determining the center value comprises means for determining a median value for the set of pixels.

28. The apparatus of claim 23, wherein the means for determining the offset values for the bands based on the two or more groups of bands comprises means for generating a band offset value for a band of a first group based on a second band offset of the first group.

29. The apparatus of claim 23, wherein the means for determining the offset values for the bands based on the two or more groups of bands comprises means for generating a band offset value for a band of a first group based on a band offset determined for a neighboring partition.

30. The method of claim 1, wherein determining that the SAO type for the set of pixels comprises the band classification offset type comprises receiving signaling information indicating the SAO type.

31. The video coding device of claim 8, wherein the video coder is further configured to receive signaling information indicating the SAO type to determine that the SAO type for the set of pixels comprises the band classification offset type comprises.