CLAIMS

1. A method of decoding video data, the method comprising:

for a residual block of video data encoded using a transform skip mode, determining a value for a first neighboring coefficient of a coefficient currently being decoded;

determining a value for a second neighboring coefficient of the coefficient currently being decoded;

determining a context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, wherein determining the context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient comprises:

selecting a first context offset in response to the first neighboring coefficient and the second neighboring coefficient are both equal to zero or have opposite signs;

selecting a second context offset in response to the first neighboring coefficient and the second neighboring coefficient are both positive or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is positive; and

selecting a third context offset in response to the first neighboring coefficient and the second neighboring coefficient are both negative or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is negative; and

decoding a value for the coefficient currently being decoded based on the determined context offset.

2. The method of claim 1, wherein the first neighboring coefficient comprises one of a top neighboring coefficient or a left neighboring coefficient to the coefficient currently being decoded, and the second neighboring coefficient comprises the other of the top neighboring coefficient or the left neighboring coefficient.

3. The method of claim 1, wherein decoding the value for the coefficient currently being decoded based on the determined context offset comprises:

determining a context based on the determined context offset;

receiving one or more bins of data; and

context decoding the one or more bins of data based on the determined context to determine a sign for the coefficient currently being decoded.

4. The method of claim 3, wherein decoding the value for the coefficient currently being decoded based on the determined context offset further comprises:

determining a predicted level value for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient;

receiving a syntax element;

in response to the syntax element having a value equal to one, determining that a level value of the coefficient currently being decoded is equal to the predicted level value.

5. The method of claim 3, wherein decoding the value for the coefficient currently being decoded based on the determined context offset further comprises:

determining a predicted level value for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient;

receiving a syntax element;

in response to a value for the syntax element being greater than the predicted level value, determining that a level value of the coefficient currently being decoded is equal to the value for the syntax element plus one.

6. The method of claim 3, wherein decoding the value for the coefficient currently being decoded based on the determined context offset further comprises:

determining a predicted level value for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient;

receiving a syntax element;

in response to a value for the syntax element being less than the predicted level value, determining that a level value of the coefficient currently being decoded is equal to the value for the syntax element.

7. The method of claim 1, further comprising:

inverse quantizing, without inverse transforming, the value for the coefficient currently being decoded to determine a residual value for the residual block of video data.

8. The method of claim 1, further comprising:

determining a decoded residual block based on the value for the coefficient currently being decoded;

adding the decoded residual block to a prediction block to determine a reconstructed block;

performing one or more filtering operations on the reconstructed block to determine a decoded block of video data; and

outputting a decoded picture of video data that includes the decoded block of video data.

9. A method of encoding video data, the method comprising:

for a residual block of video data encoded using a transform skip mode, determining a value for a first neighboring coefficient of a coefficient currently being encoded;

determining a value for a second neighboring coefficient of the coefficient currently being encoded;

determining a context offset for the coefficient currently being encoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, wherein determining the context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient comprises:

selecting a first context offset in response to the first neighboring coefficient and the second neighboring coefficient are both equal to zero or have opposite signs;

selecting a second context offset in response to the first neighboring coefficient and the second neighboring coefficient are both positive or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is positive; and

selecting a third context offset in response to the first neighboring coefficient and the second neighboring coefficient are both negative or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and

the other one of the first neighboring coefficient and the second neighboring coefficient is negative; and

encoding a value for the coefficient currently being encoded based on the determined context offset.

10. The method of claim 9, wherein the first neighboring coefficient comprises one of a top neighboring coefficient or a left neighboring coefficient, and the second neighboring coefficient comprises the other of the top neighboring coefficient or the left neighboring coefficient.

11. The method of claim 9, wherein encoding the value for the coefficient currently being encoded based on the determined context offset comprises:

determining a context based on the determined context offset;

determining a sign for the coefficient currently being encoded; and

context encoding one or more bins of data based on the determined context to represent the sign for the coefficient currently being encoded.

12. The method of claim 11, wherein encoding the value for the coefficient currently being encoded based on the determined context offset further comprises:

determining a predicted level value for the coefficient currently being encoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient;

in response to a level value of the coefficient currently being encoded being equal to the predicted level value, encoding a syntax element with a value equal to one.

13. The method of claim 11, wherein encoding the value for the coefficient currently being encoded based on the determined context offset further comprises:

determining a predicted level value for the coefficient currently being encoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient;

in response to a level value of the coefficient currently being encoded being less than the predicted level value, encoding a syntax element with a value equal to the level value of the coefficient currently being encoded.

14. The method of claim 11, wherein encoding the value for the coefficient currently being encoded based on the determined context offset further comprises:

determining a predicted level value for the coefficient currently being encoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient;

in response to a level value of the coefficient currently being encoded being greater than the predicted level value, encoding a syntax element with a value equal to the level value of the coefficient currently being encoded minus one.

15. The method of claim 9, further comprising:

quantizing a residual value for the residual block of video data to determine the value for the coefficient currently being encoded.

16. The method of claim 9, further comprising:

determining a prediction block; and

comparing the prediction block to an original block of video data to determine the residual block of video data.

17. A device for decoding video data, the device comprising:

a memory configured to store video data; and

one or more processors implemented in circuitry and configured to:

for a residual block of video data encoded using a transform skip mode, determine a value for a first neighboring coefficient of a coefficient currently being decoded;

determine a value for a second neighboring coefficient of the coefficient currently being decoded;

determine a context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, wherein to determine the context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, the one or more processors are configured to:

select a first context offset in response to the first neighboring coefficient and the second neighboring coefficient are both equal to zero or have opposite signs;

select a second context offset in response to the first neighboring coefficient and the second neighboring coefficient are both positive or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is positive; and

select a third context offset in response to the first neighboring coefficient and the second neighboring coefficient are both negative or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is negative; and

decode a value for the coefficient currently being decoded based on the determined context offset.

18. The device of claim 17, wherein the first neighboring coefficient comprises one of a top neighboring coefficient or a left neighboring coefficient, and the second neighboring coefficient comprises the other of the top neighboring coefficient or the left neighboring coefficient.

19. The device of claim 17, wherein to decode the value for the coefficient currently being decoded based on the determined context offset, the one or more processors are further configured to:

determine a context based on the determined context offset;

receive one or more bins of data; and

context decode the one or more bins of data based on the determined context to determine a sign for the coefficient currently being decoded.

20. The device of claim 17, wherein the one or more processors are further configured to:

inverse quantize the value for the coefficient currently being decoded to determine a residual value for the residual block of video data.

21. The device of claim 17, wherein the one or more processors are further configured to:

determine a decoded residual block based on the value for the coefficient currently being decoded;

add the decoded residual block to a prediction block to determine a reconstructed block;

perform one or more filtering operations on the reconstructed block to determine a decoded block of video data; and

output a decoded picture of video data that includes the decoded block of video data.

22. The device of claim 17, wherein the device comprises a wireless communication device, the wireless communication device comprising a receiver configured to receive encoded video data.

23. The device of claim 22, wherein the wireless communication device comprises a telephone handset and wherein the receiver is configured to demodulate, according to a wireless communication standard, a signal comprising the encoded video data.

24. The device of claim 17, further comprising:

a display configured to display decoded video data.

25. The device of claim 17, wherein the device comprises one or more of a camera, a computer, a mobile device, a broadcast receiver device, or a set-top box.

26. A device for encoding video data, the device comprising:

a memory configured to store video data; and

one or more processors implemented in circuitry and configured to:

for a residual block of video data encoded using a transform skip mode, determine a value for a first neighboring coefficient of a coefficient currently being encoded;

determine a value for a second neighboring coefficient of the coefficient currently being encoded;

determine a context offset for the coefficient currently being encoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, wherein to determine the context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, the one or more processors are configured to:

select a first context offset in response to the first neighboring coefficient and the second neighboring coefficient are both equal to zero or have opposite signs;

select a second context offset in response to the first neighboring coefficient and the second neighboring coefficient are both positive or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is positive; and

select a third context offset in response to the first neighboring coefficient and the second neighboring coefficient are both negative or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is negative; and

encode a value for the coefficient currently being encoded based on the determined context offset.

27. The device of claim 26, wherein the first neighboring coefficient comprises one of a top neighboring coefficient or a left neighboring coefficient, and the second neighboring coefficient comprises the other of the top neighboring coefficient or the left neighboring coefficient.

28. The device of claim 26, wherein to encode the value for the coefficient currently being encoded based on the determined context offset, the one or more processors are further configured to:

determine a context based on the determined context offset;

determine a sign for the coefficient currently being encoded; and

context encode one or more bins of data based on the determined context to represent the sign for the coefficient currently being encoded.

29. The device of claim 26, wherein the one or more processors are further configured to:

quantize a residual value for the residual block of video data to determine the value for the coefficient currently being encoded.

30. The device of claim 26, wherein the one or more processors are further configured to:

determine a prediction block; and

compare the prediction block to an original block of video data to determine the residual block of video data.

31. An apparatus for decoding video data, the apparatus comprising:

means for determining, for a residual block of video data encoded using a transform skip mode, a value for a first neighboring coefficient of a coefficient currently being decoded;

means for determining a value for a second neighboring coefficient of the coefficient currently being decoded;

means for determining a context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, wherein the means for determining the context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient comprises:

means for selecting a first context offset in response to the first neighboring coefficient and the second neighboring coefficient are both equal to zero or have opposite signs;

means for selecting a second context offset in response to the first neighboring coefficient and the second neighboring coefficient are both positive or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is positive; and

means for selecting a third context offset in response to the first neighboring coefficient and the second neighboring coefficient are both negative or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is negative; and

means for decoding a value for the coefficient currently being decoded based on the determined context offset.

32. A non-transitory computer-readable storage medium storing instructions that when executed by one or more processors cause the one or more processors to:

determine, for a residual block of video data encoded using a transform skip mode, a value for a first neighboring coefficient of a coefficient currently being decoded;

determine a value for a second neighboring coefficient of the coefficient currently being decoded;

determine a context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient; wherein to determine the context offset for the coefficient currently being decoded based on the value for the first neighboring coefficient and the value for the second neighboring coefficient, the instructions cause the one or more processors:

select a first context offset in response to the first neighboring coefficient and the second neighboring coefficient are both equal to zero or have opposite signs;

select a second context offset in response to the first neighboring coefficient and the second neighboring coefficient are both positive or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is positive; and

select a third offset in response to the first neighboring coefficient and the second neighboring coefficient are both negative or one of the first neighboring coefficient and the second neighboring coefficient is equal to zero and the other one of the first neighboring coefficient and the second neighboring coefficient is negative; and

decode a value for the coefficient currently being decoded based on the determined context offset.