WHAT IS CLAIMED IS:

1. A method for encoding a reference index syntax element in a video encoding process, the method comprising:

binarizing a reference index value;

encoding at least one bin of the binarized reference index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process; and

encoding, when the binarized reference index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the binarized reference index value with a bypass coding mode of the CABAC process.

2. The method of claim 1,

wherein encoding at least one bin of the binarized reference index value with the context coding mode comprises:

encoding a first bin (bin0) of the binarized reference index value with a first context (ctx0),

encoding a second bin (bin1) of the binarized reference index with a second context (ctx1), and

wherein encoding at least another bin of the binarized reference index value with the bypass coding mode comprises:

encoding a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

3. The method of claim 2, wherein binarizing the reference index value comprises binarizing the reference index value using a combined truncated unary and exponential Golomb code.

4. The method of claim 1, wherein encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises encoding the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

5. The method of claim 1, further comprising:

binarizing components of a first motion vector difference value associated with the first reference index and components of a second motion vector difference value associated with a second reference index;

encoding a first portion of the components of first motion vector difference value and a first portion of the components of the second motion vector difference value with the context coding mode; and

encoding a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode.

6. The method of claim 5, further comprising:

grouping the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

grouping the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

7. The method of claim 1,

wherein encoding at least one bin of the binarized reference index value with the context coding mode comprises:

encoding a first bin (bin0) of the binarized reference index value with a first context (ctx0),

encoding a second bin (bin1) of the binarized reference index with a second context (ctx1),

encoding a third bin (bin2) of the binarized reference index with a third context (ctx2), and

wherein encoding at least another bin of the binarized reference index value with the bypass coding mode comprises:

encoding all remaining bins after the third bin (bin2) with the bypass coding mode.

8. The method of claim 1,

wherein encoding at least one bin of the binarized reference index value with the context coding mode comprises:

encoding a first bin (bin0) of the binarized reference index value with a first context (ctx0), and

wherein encoding at least another bin of the binarized reference index value with the bypass coding mode comprises:

encoding all remaining bins after the first bin (bin0) with the bypass coding mode.

9. The method of claim 1,

wherein binarizing the reference index value comprises unary coding the reference index value;

wherein encoding the at least one bin of the binarized reference index value with the context coding mode comprises:

encoding at least one bin of the unary coded reference index value with the context coding mode; and

wherein encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises:

encoding at least another bin of the unary coded reference index value with the bypass coding mode.

10. The method of claim 9, wherein unary coding the reference index value comprises truncated unary coding the reference index value.

11. The method of claim 1, wherein

binarizing the reference index value comprises unary coding and exponential-Golomb coding the reference index value;

wherein encoding the at least one bin of the binarized reference index value with the context coding mode comprises:

encoding at least one bin of a unary coded portion of the reference index value with the context coding mode; and

wherein encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises:

encoding at least another bin of the unary coded portion of the reference index value and an exponential-Golomb coded portion of the reference index value with the bypass coding mode.

12. The method of claim 11, further comprising truncating the exponential-Golomb coded portion of the reference index value prior to encoding the exponential-Golomb coded portion of the reference index value.

13. The method of claim 1,

wherein binarizing the reference index value comprises unary coding and fixed length coding the reference index value;

wherein encoding the at least one bin of the binarized reference index value with the context coding mode comprises encoding at least one bin of a unary coded portion of the reference index value with the context coding mode; and

wherein encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises encoding at least another bin of the unary coded portion reference index value and a fixed length coded portion of the reference index value with the bypass coding mode.

14. The method of claim 13, further comprising truncating the fixed length coded portion of the reference index value prior to coding the fixed length coded portion of the reference index value.

15. The method of claim 1,

wherein encoding with the context coding mode comprises selecting one or more probability models for coding the at least one bin of the binarized reference index and encoding the at least one bin of the binarized reference index using the selected one or more probability models; and

wherein encoding with the bypass coding mode comprises determining a fixed probability and encoding the at least another bin of the binarized reference index value using the fixed probability.

16. An apparatus for encoding a reference index syntax element in a video encoding process, the apparatus comprising one or more processors to:

binarize a reference index value;

encode at least one bin of the binarized reference index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process; and

encode, when the binarized reference index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the binarized reference index value with a bypass coding mode of the CABAC process.

17. The apparatus of claim 16,

wherein to encode at least one bin of the binarized reference index value with the context coding mode, the one or more processors are configured to:

encode a first bin (bin0) of the binarized reference index value with a first context (ctx0),

encode a second bin (bin1) of the binarized reference index with a second context (ctx1), and

wherein to encode at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to:

encode a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

18. The apparatus of claim 17, wherein to binarize the reference index value, the one or more processors are configured to binarize the reference index value using a combined truncated unary and exponential Golomb code.

19. The apparatus of claim 16, wherein to encode the at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to encode the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

20. The apparatus of claim 16, wherein the one or more processors are further configured to:

binarize components of a first motion vector difference value associated with the first reference index and components of a second motion vector difference value associated with a second reference index;

encode a first portion of the components of first motion vector difference value and a first portion of the components of the second motion vector difference value with the context coding mode; and

encode a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode.

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

group the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

group the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

22. The apparatus of claim 16,

wherein to encode at least one bin of the binarized reference index value with the context coding mode, the one or more processors are configured to:

encode a first bin (bin0) of the binarized reference index value with a first context (ctx0),

encode a second bin (bin1) of the binarized reference index with a second context (ctx1),

encode a third bin (bin2) of the binarized reference index with a third context (ctx2), and

wherein to encode at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to:

encode all remaining bins after the third bin (bin2) with the bypass coding mode.

23. The apparatus of claim 16,

wherein to encode at least one bin of the binarized reference index value with the context coding mode, the one or more processors are configured to:

encode a first bin (bin0) of the binarized reference index value with a first context (ctx0), and

wherein to encode at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to:

encode all remaining bins after the first bin (bin0) with the bypass coding mode.

24. The apparatus of claim 16,

wherein to binarize the reference index value, the one or more processors are configured to unary code the reference index value;

wherein to encode the at least one bin of the binarized reference index value with the context coding mode, the one or more processors are configured to:

encode at least one bin of the unary coded reference index value with the context coding mode; and

wherein to encode the at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to:

encode at least another bin of the unary coded reference index value with the bypass coding mode.

25. The apparatus of claim 24, wherein to unary code the reference index value, the one or more processors are configured to truncated unary code the reference index value.

26. The apparatus of claim 16,

wherein to binarize the reference index value, the one or more processors are configured to unary code and exponential-Golomb code the reference index value;

wherein to encode the at least one bin of the binarized reference index value with the context coding mode, the one or more processors are configured to:

encode at least one bin of a unary coded portion of the reference index value with the context coding mode; and

wherein to encode the at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to:

encode at least another bin of the unary coded portion of the reference index value and an exponential-Golomb coded portion of the reference index value with the bypass coding mode.

27. The apparatus of claim 26, wherein the one or more processors are further configured to truncate the exponential-Golomb coded portion of the reference index value prior to encoding the exponential-Golomb coded portion of the reference index value.

28. The apparatus of claim 16,

wherein to binarize the reference index value, the one or more processors are configured to unary code and fixed length code the reference index value;

wherein to encode the at least one bin of the binarized reference index value with the context coding mode, the one or more processors are configured to encode at least one bin of a unary coded portion of the reference index value with the context coding mode; and

wherein to encode the at least another bin of the binarized reference index value with the bypass coding mode, the one or more processors are configured to encode at least another bin of the unary coded portion reference index value and a fixed length coded portion of the reference index value with the bypass coding mode.

29. The apparatus of claim 28, wherein the one or more processors are further configured to truncate the fixed length coded portion of the reference index value prior to coding the fixed length coded portion of the reference index value.

30. The apparatus of claim 16,

wherein to encode with the context coding mode, the one or more processors are configured to select one or more probability models for coding the at least one bin of the binarized reference index and encode the at least one bin of the binarized reference index using the selected one or more probability models; and

wherein to encode with the bypass coding mode, the one or more processors are configured to determine a fixed probability and encode the at least another bin of the binarized reference index value using the fixed probability.

31. An apparatus for encoding a reference index syntax element in a video encoding process, the apparatus comprising:

means for binarizing a reference index value;

means for encoding at least one bin of the binarized reference index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process; and

means for encoding, when the binarized reference index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the binarized reference index value with a bypass coding mode of the CABAC process.

32. The apparatus of claim 31,

wherein the means for encoding at least one bin of the binarized reference index value with the context coding mode comprises:

means for encoding a first bin (bin0) of the binarized reference index value with a first context (ctx0),

means for encoding a second bin (bin1) of the binarized reference index with a second context (ctx1), and

wherein the means for encoding at least another bin of the binarized reference index value with the bypass coding mode comprises:

means for encoding a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

33. The apparatus of claim 32, wherein the means for binarizing the reference index value comprises means for binarizing the reference index value using a combined truncated unary and exponential Golomb code.

34. The apparatus of claim 31, wherein the means for encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises means for encoding the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

35. The apparatus of claim 31, further comprising:

means for binarizing components of a first motion vector difference value associated with the first reference index and components of a second motion vector difference value associated with a second reference index;

means for encoding a first portion of the components of first motion vector difference value and a first portion of the components of the second motion vector difference value with the context coding mode; and

means for encoding a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode.

36. The apparatus of claim 35, further comprising:

means for grouping the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

means for grouping the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

37. The apparatus of claim 31,

wherein the means for encoding at least one bin of the binarized reference index value with the context coding mode comprises:

means for encoding a first bin (bin0) of the binarized reference index value with a first context (ctx0),

means for encoding a second bin (bin1) of the binarized reference index with a second context (ctx1),

means for encoding a third bin (bin2) of the binarized reference index with a third context (ctx2), and

wherein the means for encoding at least another bin of the binarized reference index value with the bypass coding mode comprises:

means for encoding all remaining bins after the third bin (bin2) with the bypass coding mode.

38. The apparatus of claim 31,

wherein the means for encoding at least one bin of the binarized reference index value with the context coding mode comprises:

means for encoding a first bin (bin0) of the binarized reference index value with a first context (ctx0), and

wherein the means for encoding at least another bin of the binarized reference index value with the bypass coding mode comprises:

means for encoding all remaining bins after the first bin (bin0) with the bypass coding mode.

39. The apparatus of claim 31,

wherein the means for binarizing the reference index value comprises means for unary coding the reference index value;

wherein the means for encoding the at least one bin of the binarized reference index value with the context coding mode comprises:

means for encoding at least one bin of the unary coded reference index value with the context coding mode; and

wherein the means for encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises:

means for encoding at least another bin of the unary coded reference index value with the bypass coding mode.

40. The apparatus of claim 39, wherein the means for unary coding the reference index value comprises means for truncated unary coding the reference index value.

41. The apparatus of claim 31,

wherein the means for binarizing the reference index value comprises means for unary coding and exponential-Golomb coding the reference index value;

wherein the means for encoding the at least one bin of the binarized reference index value with the context coding mode comprises:

means for encoding at least one bin of a unary coded portion of the reference index value with the context coding mode; and

wherein the means for encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises:

means for encoding at least another bin of the unary coded portion of the reference index value and an exponential-Golomb coded portion of the reference index value with the bypass coding mode.

42. The apparatus of claim 41, further comprising means for truncating the exponential-Golomb coded portion of the reference index value prior to encoding the exponential-Golomb coded portion of the reference index value.

43. The apparatus of claim 31,

wherein the means for binarizing the reference index value comprises means for unary coding and fixed length coding the reference index value;

wherein the means for encoding the at least one bin of the binarized reference index value with the context coding mode comprises means for encoding at least one bin of a unary coded portion of the reference index value with the context coding mode; and

wherein the means for encoding the at least another bin of the binarized reference index value with the bypass coding mode comprises means for encoding at least another bin of the unary coded portion reference index value and a fixed length coded portion of the reference index value with the bypass coding mode.

44. The apparatus of claim 43, further comprising means for truncating the fixed length coded portion of the reference index value prior to coding the fixed length coded portion of the reference index value.

45. The apparatus of claim 31,

wherein means for encoding with the context coding mode comprises means for selecting one or more probability models for coding the at least one bin of the binarized reference index and means for encoding the at least one bin of the binarized reference index using the selected one or more probability models; and

wherein means for encoding with the bypass coding mode comprises means for determining a fixed probability and means for encoding the at least another bin of the binarized reference index value using the fixed probability.

46. A method for decoding a reference index syntax element in a video decoding process, the method comprising:

decoding at least one bin of a reference index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

decoding, when the reference index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the reference index value with a bypass coding mode of the CABAC process; and

binarizing the reference index value.

47. The method of claim 46,

wherein decoding at least one bin of the reference index value with the context coding mode comprises:

decoding a first bin (bin0) of the reference index value with a first context (ctx0),

decoding a second bin (bin1) of the reference index with a second context (ctx1), and

wherein decoding at least another bin of the reference index value with the bypass coding mode comprises:

decoding a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

48. The method of claim 47, wherein binarizing the reference index value comprises binarizing the reference index value using a combined truncated unary and exponential Golomb code.

49. The method of claim 46, wherein decoding the at least another bin of the reference index value with the bypass coding mode comprises decoding the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

50. The method of claim 46, further comprising:

decoding a first portion of components of a first motion vector difference value and a first portion of components of a second motion vector difference value with the context coding mode;

decoding a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode; and

binarizing the components of the first motion vector difference value associated with the first reference index and the components of the second motion vector difference value associated with a second reference index.

51. The method of claim 50, further comprising:

grouping the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

grouping the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

52. The method of claim 46,

wherein decoding at least one bin of the reference index value with the context coding mode comprises:

decoding a first bin (bin0) of the reference index value with a first context (ctx0),

decoding a second bin (bin1) of the reference index with a second context (ctx1),

decoding a third bin (bin2) of the reference index with a third context (ctx2), and

wherein decoding at least another bin of the reference index value with the bypass coding mode comprises:

decoding all remaining bins after the third bin (bin2) with the bypass coding mode.

53. The method of claim 46,

wherein decoding at least one bin of the reference index value with the context coding mode comprises:

decoding a first bin (bin0) of the reference index value with a first context (ctx0), and

wherein decoding at least another bin of the reference index value with the bypass coding mode comprises:

decoding all remaining bins after the first bin (bin0) with the bypass coding mode.

54. The method of claim 46,

wherein decoding the at least one bin of the reference index value with the context coding mode comprises:

decoding at least one bin of the unary coded reference index value with the context coding mode;

wherein decoding the at least another bin of the index value with the bypass coding mode comprises:

decoding at least another bin of the unary coded reference index value with the bypass coding mode; and

wherein binarizing the reference index value comprises unary coding the reference index value.

55. The method of claim 54, wherein unary coding the reference index value comprises truncated unary coding the reference index value.

56. The method of claim 46,

wherein decoding the at least one bin of the reference index value with the context coding mode comprises:

decoding at least one bin of a unary coded portion of the reference index value with the context coding mode;

wherein decoding the at least another bin of the reference index value with the bypass coding mode comprises:

decoding at least another bin of the unary coded portion of the reference index value and an exponential-Golomb coded portion of the reference index value with the bypass coding mode; and

wherein binarizing the reference index value comprises unary coding and exponential-Golomb coding the reference index value.

57. The method of claim 56, further comprising truncating the exponential-Golomb coded portion of the reference index value prior to decoding the exponential-Golomb coded portion of the reference index value.

58. The method of claim 46,

wherein decoding the at least one bin of the reference index value with the context coding mode comprises decoding at least one bin of a unary coded portion of the reference index value with the context coding mode;

wherein decoding the at least another bin of the reference index value with the bypass coding mode comprises decoding at least another bin of the unary coded portion reference index value and a fixed length coded portion of the reference index value with the bypass coding mode; and

wherein binarizing the reference index value comprises unary coding and fixed length coding the reference index value.

59. The method of claim 58, further comprising truncating the fixed length coded portion of the reference index value prior to coding the fixed length coded portion of the reference index value.

60. The method of claim 46,

wherein decoding with the context coding mode comprises selecting one or more probability models for coding the at least one bin of the binarized reference index and decoding the at least one bin of the binarized reference index using the selected one or more probability models; and

wherein decoding with the bypass coding mode comprises determining a fixed probability and decoding the at least another bin of the binarized reference index value using the fixed probability.

61. An apparatus for decoding a reference index syntax element in a video decoding process, the apparatus comprising one or more processors configured to:

decode at least one bin of a reference index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

decode, when the reference index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the reference index value with a bypass coding mode of the CABAC process; and

binarize the reference index value.

62. The apparatus of claim 61,

wherein to decode at least one bin of the reference index value with the context coding mode, the one or more processors are configured to:

decode a first bin (bin0) of the reference index value with a first context (ctx0),

decode a second bin (bin1) of the reference index with a second context (ctx1), and

wherein to decode at least another bin of the reference index value with the bypass coding mode, the one or more processors are configured to:

decode a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

63. The apparatus of claim 62, wherein to binarize the reference index value, the one or more processors are configured to binarize the reference index value using a combined truncated unary and exponential Golomb code.

64. The apparatus of claim 61, wherein to decode the at least another bin of the reference index value with the bypass coding mode, the one or more processors are configured to decode the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

65. The apparatus of claim 61, wherein the one or more processors are further configured to:

decode a first portion of components of a first motion vector difference value and a first portion of components of a second motion vector difference value with the context coding mode;

decode a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode; and

binarize the components of the first motion vector difference value associated with the first reference index and the components of the second motion vector difference value associated with a second reference index.

66. The apparatus of claim 65, wherein the one or more processors are further configured to:

group the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

group the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

67. The apparatus of claim 61,

wherein to decode at least one bin of the reference index value with the context coding mode, the one or more processors are configured to:

decode a first bin (bin0) of the reference index value with a first context (ctx0),

decode a second bin (bin1) of the reference index with a second context (ctx1),

decode a third bin (bin2) of the reference index with a third context (ctx2), and

wherein to decode at least another bin of the reference index value with the bypass coding mode, the one or more processors are configured to:

decode all remaining bins after the third bin (bin2) with the bypass coding mode.

68. The apparatus of claim 61,

wherein to decode at least one bin of the reference index value with the context coding mode, the one or more processors are configured to:

decode a first bin (bin0) of the reference index value with a first context (ctx0), and

wherein to decode at least another bin of the reference index value with the bypass coding mode, the one or more processors are configured to:

decode all remaining bins after the first bin (bin0) with the bypass coding mode.

69. The apparatus of claim 61,

wherein to decode the at least one bin of the reference index value with the context coding mode, the one or more processors are configured to:

decode at least one bin of the unary coded reference index value with the context coding mode;

wherein to decode the at least another bin of the index value with the bypass coding mode, the one or more processors are configured to:

decode at least another bin of the unary coded reference index value with the bypass coding mode; and

wherein to binarize the reference index value, the one or more processors are configured to unary code the reference index value.

70. The apparatus of claim 69, wherein to unary code the reference index value, the one or more processors are configured to truncated unary code the reference index value.

71. The apparatus of claim 61,

wherein to decode the at least one bin of the reference index value with the context coding mode, the one or more processors are configured to:

decode at least one bin of a unary coded portion of the reference index value with the context coding mode;

wherein to decode the at least another bin of the reference index value with the bypass coding mode, the one or more processors are configured to:

decode at least another bin of the unary coded portion of the reference index value and an exponential-Golomb coded portion of the reference index value with the bypass coding mode; and

wherein to binarize the reference index value, the one or more processors are configured to unary code and exponential-Golomb code the reference index value.

72. The apparatus of claim 71, wherein the one or more processors are further configured to truncate the exponential-Golomb coded portion of the reference index value prior to decoding the exponential-Golomb coded portion of the reference index value.

73. The apparatus of claim 61,

wherein to decode the at least one bin of the reference index value with the context coding mode, the one or more processors are configured to decode at least one bin of a unary coded portion of the reference index value with the context coding mode;

wherein to decode the at least another bin of the reference index value with the bypass coding mode, the one or more processors are configured to decode at least another bin of the unary coded portion reference index value and a fixed length coded portion of the reference index value with the bypass coding mode; and

wherein to binarize the reference index value, the one or more processors are configured to unary code and fixed length code the reference index value.

74. The apparatus of claim 73, wherein the one or more processors are further configured to truncate the fixed length coded portion of the reference index value prior to coding the fixed length coded portion of the reference index value.

75. The apparatus of claim 61,

wherein to decode with the context coding mode, the one or more processors are configured to select one or more probability models for coding the at least one bin of the binarized reference index and decode the at least one bin of the binarized reference index using the selected one or more probability models; and

wherein to decode with the bypass coding mode, the one or more processors are configured to determine a fixed probability and decode the at least another bin of the binarized reference index value using the fixed probability.

76. A non-transitory computer-readable medium storing instructions thereon that, when executed cause one or more processors to:

decode at least one bin of a reference index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

decode, when the reference index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the reference index value with a bypass coding mode of the CABAC process; and

binarize the reference index value.

77. The computer-readable medium of claim 76,

wherein to decode at least one bin of the reference index value with the context coding mode, the instructions cause the one or more processors to:

decode a first bin (bin0) of the reference index value with a first context (ctx0),

decode a second bin (bin1) of the reference index with a second context (ctx1), and

wherein to decode at least another bin of the reference index value with the bypass coding mode, the instructions cause the one or more processors to:

decode a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

78. The computer-readable medium of claim 77, wherein to binarize the reference index value, the instructions cause the one or more processors to binarize the reference index value using a combined truncated unary and exponential Golomb code.

79. The computer-readable medium of claim 76, wherein to decode the at least another bin of the reference index value with the bypass coding mode, the instructions cause the one or more processors to decode the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

80. The computer-readable medium of claim 76, further comprising instructions that cause the one or more processors to:

decode a first portion of components of a first motion vector difference value and a first portion of components of a second motion vector difference value with the context coding mode;

decode a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode; and

binarize the components of the first motion vector difference value associated with the first reference index and the components of the second motion vector difference value associated with a second reference index.

81. The computer-readable medium of claim 80, further comprising instructions that cause the one or more processors to:

group the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

group the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

82. The computer-readable medium of claim 76,

wherein to decode at least one bin of the reference index value with the context coding mode, the instructions cause the one or more processors to:

decode a first bin (bin0) of the reference index value with a first context (ctx0),

decode a second bin (bin1) of the reference index with a second context (ctx1),

decode a third bin (bin2) of the reference index with a third context (ctx2), and

wherein to decode at least another bin of the reference index value with the bypass coding mode, the instructions cause the one or more processors to:

decode all remaining bins after the third bin (bin2) with the bypass coding mode.

83. The computer-readable medium of claim 76,

wherein to decode at least one bin of the reference index value with the context coding mode, the instructions cause the one or more processors to:

decode a first bin (bin0) of the reference index value with a first context (ctx0), and

wherein to decode at least another bin of the reference index value with the bypass coding mode, the instructions cause the one or more processors to:

decode all remaining bins after the first bin (bin0) with the bypass coding mode.

84. The computer-readable medium of claim 76,

wherein to decode the at least one bin of the reference index value with the context coding mode, the instructions cause the one or more processors to:

decode at least one bin of the unary coded reference index value with the context coding mode;

wherein to decode the at least another bin of the index value with the bypass coding mode, the instructions cause the one or more processors to:

decode at least another bin of the unary coded reference index value with the bypass coding mode; and

wherein to binarize the reference index value, the instructions cause the one or more processors to unary code the reference index value.

85. The computer-readable medium of claim 84, wherein to unary code the reference index value, the instructions cause the one or more processors to truncated unary code the reference index value.

86. The computer-readable medium of claim 76,

wherein to decode the at least one bin of the reference index value with the context coding mode, the instructions cause the one or more processors to:

decode at least one bin of a unary coded portion of the reference index value with the context coding mode;

wherein to decode the at least another bin of the reference index value with the bypass coding mode, the instructions cause the one or more processors to:

decode at least another bin of the unary coded portion of the reference index value and an exponential-Golomb coded portion of the reference index value with the bypass coding mode; and

wherein to binarize the reference index value, the instructions cause the one or more processors to unary code and exponential-Golomb code the reference index value.

87. The computer-readable medium of claim 86, further comprising instructions that cause the one or more processors to truncate the exponential-Golomb coded portion of the reference index value prior to decoding the exponential-Golomb coded portion of the reference index value.

88. The computer-readable medium of claim 76,

wherein to decode the at least one bin of the reference index value with the context coding mode, the instructions cause the one or more processors to decode at least one bin of a unary coded portion of the reference index value with the context coding mode;

wherein to decode the at least another bin of the reference index value with the bypass coding mode, the instructions cause the one or more processors to decode at least another bin of the unary coded portion reference index value and a fixed length coded portion of the reference index value with the bypass coding mode; and

wherein to binarize the reference index value, the instructions cause the one or more processors to unary code and fixed length code the reference index value.

89. The computer-readable medium of claim 88, further comprising instructions that cause the one or more processors to truncate the fixed length coded portion of the reference index value prior to coding the fixed length coded portion of the reference index value.

90. The computer-readable medium of claim 76,

wherein to decode with the context coding mode, the instructions cause the one or more processors to select one or more probability models for coding the at least one bin of the binarized reference index and decode the at least one bin of the binarized reference index using the selected one or more probability models; and

wherein to decode with the bypass coding mode, the instructions cause the one or more processors to determine a fixed probability and decode the at least another bin of the binarized reference index value using the fixed probability.

91. The computer-readable medium of claim 76, further comprising instructions that cause the one or more processors to:

decode a first bin of an inter-prediction direction syntax element with a context coding mode of the CABAC process; and

decode a second bin of the inter-prediction direction syntax element with a bypass coding mode of the CABAC process.

CLAIMS

Claim 1: A method for encoding a reference picture index syntax element in a video encoding process, the method comprising:

binarizing a reference picture index value;

encoding at least one bin of the binarized reference picture index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

determining that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode; and

encoding, in response to determining that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the binarized reference picture index value with a bypass coding mode of the CABAC process.

Claim 2: The method of claim 1,

wherein encoding at least one bin of the binarized reference picture index value with the context coding mode comprises:

encoding a first bin (bin0) of the binarized reference picture index value with a first context (ctx0),

encoding a second bin (bin1) of the binarized reference picture index with a second context (ctx1), and

wherein encoding at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

encoding a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 3: The method of claim 2, wherein binarizing the reference picture index value comprises binarizing the reference picture index value using a combined truncated unary and exponential Golomb code.

Claim 4: The method of claim 1, wherein encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises encoding the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

Claim 5: The method of claim 1, further comprising:

binarizing components of a first motion vector difference value associated with the first reference picture index and components of a second motion vector difference value associated with a second reference picture index;

encoding a first portion of the components of first motion vector difference value and a first portion of the components of the second motion vector difference value with the context coding mode; and

encoding a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode.

Claim 6: The method of claim 5, further comprising:

grouping the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

grouping the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

Claim 7: The method of claim 1,

wherein encoding at least one bin of the binarized reference picture index value with the context coding mode comprises:

encoding a first bin (bin0) of the binarized reference picture index value with a first context (ctx0),

encoding a second bin (bin1) of the binarized reference picture index with a second context (ctx1),

encoding a third bin (bin2) of the binarized reference picture index with a third context (ctx2), and

wherein encoding at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

encoding all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 8: The method of claim 1,

wherein encoding at least one bin of the binarized reference picture index value with the context coding mode comprises:

encoding a first bin (bin0) of the binarized reference picture index value with a first context (ctx0), and

wherein encoding at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

encoding all remaining bins after the first bin (bin0) with the bypass coding mode.

Claim 9: The method of claim 1,

wherein binarizing the reference picture index value comprises unary coding the reference picture index value;

wherein encoding the at least one bin of the binarized reference picture index value with the context coding mode comprises:

encoding at least one bin of the unary coded reference picture index value with the context coding mode; and

wherein encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

encoding at least another bin of the unary coded reference picture index value with the bypass coding mode.

Claim 10: The method of claim 9, wherein unary coding the reference picture index value comprises truncated unary coding the reference picture index value.

Claim 11: The method of claim 1, wherein

binarizing the reference picture index value comprises unary coding and exponential-Golomb coding the reference picture index value;

wherein encoding the at least one bin of the binarized reference picture index value with the context coding mode comprises:

encoding at least one bin of a unary coded portion of the reference picture index value with the context coding mode; and

wherein encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

encoding at least another bin of the unary coded portion of the reference picture index value and an exponential-Golomb coded portion of the reference picture index value with the bypass coding mode.

Claim 12: The method of claim 11, further comprising truncating the exponential-Golomb coded portion of the reference picture index value prior to encoding the exponential-Golomb coded portion of the reference picture index value.

Claim 13: The method of claim 1,

wherein binarizing the reference picture index value comprises unary coding and fixed length coding the reference picture index value;

wherein encoding the at least one bin of the binarized reference picture index value with the context coding mode comprises encoding at least one bin of a unary coded portion of the reference picture index value with the context coding mode; and

wherein encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises encoding at least another bin of the unary coded portion reference picture index value and a fixed length coded portion of the reference picture index value with the bypass coding mode.

Claim 14: The method of claim 13, further comprising truncating the fixed length coded portion of the reference picture index value prior to coding the fixed length coded portion of the reference picture index value.

Claim 15: The method of claim 1,

wherein encoding with the context coding mode comprises selecting one or more probability models for coding the at least one bin of the binarized reference picture index and encoding the at least one bin of the binarized reference picture index using the selected one or more probability models; and

wherein encoding with the bypass coding mode comprises determining a fixed probability and encoding the at least another bin of the binarized reference picture index value using the fixed probability.

Claim 16: An apparatus for encoding a reference picture index syntax element in a video encoding process, the apparatus comprising:

a decoded picture buffer configured to store one or more reference pictures; and one or more processors to:

binarize a reference picture index value for a reference picture of the one or more reference pictures;

encode at least one bin of the binarized reference picture index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

determine that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode; and

encode, in response to determining that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the binarized reference picture index value with a bypass coding mode of the CABAC process.

Claim 17: The apparatus of claim 16,

wherein to encode at least one bin of the binarized reference picture index value with the context coding mode, the one or more processors are configured to:

encode a first bin (bin0) of the binarized reference picture index value with a first context (ctx0),

encode a second bin (bin1) of the binarized reference picture index with a second context (ctx1), and

wherein to encode at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to:

encode a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 18: The apparatus of claim 17, wherein to binarize the reference picture index value, the one or more processors are configured to binarize the reference picture index value using a combined truncated unary and exponential Golomb code.

Claim 19: The apparatus of claim 16, wherein to encode the at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to encode the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

Claim 20: The apparatus of claim 16, wherein the one or more processors are further configured to:

binarize components of a first motion vector difference value associated with the first reference picture index and components of a second motion vector difference value associated with a second reference picture index;

encode a first portion of the components of first motion vector difference value and a first portion of the components of the second motion vector difference value with the context coding mode; and

encode a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode.

Claim 21: The apparatus of claim 20, wherein the one or more processors are further configured to:

group the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

group the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

Claim 22: The apparatus of claim 16,

wherein to encode at least one bin of the binarized reference picture index value with the context coding mode, the one or more processors are configured to:

encode a first bin (bin0) of the binarized reference picture index value with a first context (ctx0),

encode a second bin (bin1) of the binarized reference picture index with a second context (ctx1),

encode a third bin (bin2) of the binarized reference picture index with a third context (ctx2), and

wherein to encode at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to:

encode all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 23: The apparatus of claim 16,

wherein to encode at least one bin of the binarized reference picture index value with the context coding mode, the one or more processors are configured to:

encode a first bin (bin0) of the binarized reference picture index value with a first context (ctx0), and

wherein to encode at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to:

encode all remaining bins after the first bin (bin0) with the bypass coding mode.

Claim 24: The apparatus of claim 16,

wherein to binarize the reference picture index value, the one or more processors are configured to unary code the reference picture index value;

wherein to encode the at least one bin of the binarized reference picture index value with the context coding mode, the one or more processors are configured to:

encode at least one bin of the unary coded reference picture index value with the context coding mode; and

wherein to encode the at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to:

encode at least another bin of the unary coded reference picture index value with the bypass coding mode.

Claim 25: The apparatus of claim 24, wherein to unary code the reference picture index value, the one or more processors are configured to truncated unary code the reference picture index value.

Claim 26: The apparatus of claim 16,

wherein to binarize the reference picture index value, the one or more processors are configured to unary code and exponential-Golomb code the reference picture index value;

wherein to encode the at least one bin of the binarized reference picture index value with the context coding mode, the one or more processors are configured to:

encode at least one bin of a unary coded portion of the reference picture index value with the context coding mode; and

wherein to encode the at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to:

encode at least another bin of the unary coded portion of the reference picture index value and an exponential-Golomb coded portion of the reference picture index value with the bypass coding mode.

Claim 27: The apparatus of claim 26, wherein the one or more processors are further configured to truncate the exponential-Golomb coded portion of the reference picture index value prior to encoding the exponential-Golomb coded portion of the reference picture index value.

Claim 28: The apparatus of claim 16,

wherein to binarize the reference picture index value, the one or more processors are configured to unary code and fixed length code the reference picture index value;

wherein to encode the at least one bin of the binarized reference picture index value with the context coding mode, the one or more processors are configured to encode at least one bin of a unary coded portion of the reference picture index value with the context coding mode; and

wherein to encode the at least another bin of the binarized reference picture index value with the bypass coding mode, the one or more processors are configured to encode at least another bin of the unary coded portion reference picture index value and a fixed length coded portion of the reference picture index value with the bypass coding mode.

Claim 29: The apparatus of claim 28, wherein the one or more processors are further configured to truncate the fixed length coded portion of the reference picture index value prior to coding the fixed length coded portion of the reference picture index value.

Claim 30: The apparatus of claim 16,

wherein to encode with the context coding mode, the one or more processors are configured to select one or more probability models for coding the at least one bin of the binarized reference picture index and encode the at least one bin of the binarized reference picture index using the selected one or more probability models; and

wherein to encode with the bypass coding mode, the one or more processors are configured to determine a fixed probability and encode the at least another bin of the binarized reference picture index value using the fixed probability.

Claim 31: An apparatus for encoding a reference picture index syntax element in a video encoding process, the apparatus comprising:

means for binarizing a reference picture index value;

means for encoding at least one bin of the binarized reference picture index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

means for determining that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode; and

means for encoding, in response to determining that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the binarized reference picture index value with a bypass coding mode of the CABAC process.

Claim 32: The apparatus of claim 31,

wherein the means for encoding at least one bin of the binarized reference picture index value with the context coding mode comprises:

means for encoding a first bin (bin0) of the binarized reference picture index value with a first context (ctx0),

means for encoding a second bin (bin1) of the binarized reference picture index with a second context (ctx1), and

wherein the means for encoding at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

means for encoding a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 33: The apparatus of claim 32, wherein the means for binarizing the reference picture index value comprises means for binarizing the reference picture index value using a combined truncated unary and exponential Golomb code.

Claim 34: The apparatus of claim 31, wherein the means for encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises

means for encoding the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

Claim 35: The apparatus of claim 31, further comprising:

means for binarizing components of a first motion vector difference value associated with the first reference picture index and components of a second motion vector difference value associated with a second reference picture index;

means for encoding a first portion of the components of first motion vector difference value and a first portion of the components of the second motion vector difference value with the context coding mode; and

means for encoding a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode.

Claim 36: The apparatus of claim 35, further comprising:

means for grouping the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

means for grouping the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

Claim 37: The apparatus of claim 31,

wherein the means for encoding at least one bin of the binarized reference picture index value with the context coding mode comprises:

means for encoding a first bin (bin0) of the binarized reference picture index value with a first context (ctx0),

means for encoding a second bin (bin1) of the binarized reference picture index with a second context (ctx1),

means for encoding a third bin (bin2) of the binarized reference picture index with a third context (ctx2), and

wherein the means for encoding at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

means for encoding all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 38: The apparatus of claim 31,

wherein the means for encoding at least one bin of the binarized reference picture index value with the context coding mode comprises:

means for encoding a first bin (bin0) of the binarized reference picture index value with a first context (ctx0), and

wherein the means for encoding at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

means for encoding all remaining bins after the first bin (bin0) with the bypass coding mode.

Claim 39: The apparatus of claim 31,

wherein the means for binarizing the reference picture index value comprises means for unary coding the reference picture index value;

wherein the means for encoding the at least one bin of the binarized reference picture index value with the context coding mode comprises:

means for encoding at least one bin of the unary coded reference picture index value with the context coding mode; and

wherein the means for encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

means for encoding at least another bin of the unary coded reference picture index value with the bypass coding mode.

Claim 40: The apparatus of claim 39, wherein the means for unary coding the reference picture index value comprises means for truncated unary coding the reference picture index value.

Claim 41: The apparatus of claim 31,

wherein the means for binarizing the reference picture index value comprises means for unary coding and exponential-Golomb coding the reference picture index value;

wherein the means for encoding the at least one bin of the binarized reference picture index value with the context coding mode comprises:

means for encoding at least one bin of a unary coded portion of the reference picture index value with the context coding mode; and

wherein the means for encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises:

means for encoding at least another bin of the unary coded portion of the reference picture index value and an exponential-Golomb coded portion of the reference picture index value with the bypass coding mode.

Claim 42: The apparatus of claim 41, further comprising means for truncating the exponential-Golomb coded portion of the reference picture index value prior to encoding the exponential-Golomb coded portion of the reference picture index value.

Claim 43: The apparatus of claim 31,

wherein the means for binarizing the reference picture index value comprises means for unary coding and fixed length coding the reference picture index value;

wherein the means for encoding the at least one bin of the binarized reference picture index value with the context coding mode comprises means for encoding at least one bin of a unary coded portion of the reference picture index value with the context coding mode; and

wherein the means for encoding the at least another bin of the binarized reference picture index value with the bypass coding mode comprises means for encoding at least another bin of the unary coded portion reference picture index value and a fixed length coded portion of the reference picture index value with the bypass coding mode.

Claim 44: The apparatus of claim 43, further comprising means for truncating the fixed length coded portion of the reference picture index value prior to coding the fixed length coded portion of the reference picture index value.

Claim 45: The apparatus of claim 31,

wherein means for encoding with the context coding mode comprises means for selecting one or more probability models for coding the at least one bin of the binarized reference picture index and means for encoding the at least one bin of the binarized reference picture index using the selected one or more probability models; and

wherein means for encoding with the bypass coding mode comprises means for determining a fixed probability and means for encoding the at least another bin of the

binarized reference picture index value using the fixed probability.

Claim 46: A method for decoding a reference picture index syntax element in a video decoding process, the method comprising:

decoding at least one bin of a reference picture index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

determining that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode;

decoding, in response to determining that the reference picture index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the reference picture index value with a bypass coding mode of the CABAC process; and

binarizing the reference picture index value.

Claim 47: The method of claim 46,

wherein decoding at least one bin of the reference picture index value with the context coding mode comprises:

decoding a first bin (bin0) of the reference picture index value with a first context (ctx0),

decoding a second bin (bin1) of the reference picture index with a second context (ctx1), and

wherein decoding at least another bin of the reference picture index value with the bypass coding mode comprises:

decoding a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 48: The method of claim 47, wherein binarizing the reference picture index value comprises binarizing the reference picture index value using a combined truncated unary and exponential Golomb code.

Claim 49: The method of claim 46, wherein decoding the at least another bin of the reference picture index value with the bypass coding mode comprises decoding the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

Claim 50: The method of claim 46, further comprising:

decoding a first portion of components of a first motion vector difference value and a first portion of components of a second motion vector difference value with the context coding mode;

decoding a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode; and

binarizing the components of the first motion vector difference value associated with the first reference picture index and the components of the second motion vector difference value associated with a second reference picture index.

Claim 51: The method of claim 50, further comprising:

grouping the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

grouping the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

Claim 52: The method of claim 46,

wherein decoding at least one bin of the reference picture index value with the context coding mode comprises:

decoding a first bin (bin0) of the reference picture index value with a first context (ctx0),

decoding a second bin (bin1) of the reference picture index with a second context (ctx1),

decoding a third bin (bin2) of the reference picture index with a third context (ctx2), and

wherein decoding at least another bin of the reference picture index value with the bypass coding mode comprises:

decoding all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 53: The method of claim 46,

wherein decoding at least one bin of the reference picture index value with the context coding mode comprises:

decoding a first bin (bin0) of the reference picture index value with a first context (ctx0), and

wherein decoding at least another bin of the reference picture index value with the bypass coding mode comprises:

decoding all remaining bins after the first bin (bin0) with the bypass coding mode.

Claim 54: The method of claim 46,

wherein decoding the at least one bin of the reference picture index value with the context coding mode comprises:

decoding at least one bin of the unary coded reference picture index value with the context coding mode;

wherein decoding the at least another bin of the index value with the bypass coding mode comprises:

decoding at least another bin of the unary coded reference picture index value with the bypass coding mode; and

wherein binarizing the reference picture index value comprises unary coding the reference picture index value.

Claim 55: The method of claim 54, wherein unary coding the reference picture index value comprises truncated unary coding the reference picture index value.

Claim 56: The method of claim 46,

wherein decoding the at least one bin of the reference picture index value with the context coding mode comprises:

decoding at least one bin of a unary coded portion of the reference picture index value with the context coding mode;

wherein decoding the at least another bin of the reference picture index value with the bypass coding mode comprises:

decoding at least another bin of the unary coded portion of the reference picture index value and an exponential-Golomb coded portion of the reference picture index value with the bypass coding mode; and

wherein binarizing the reference picture index value comprises unary coding and exponential-Golomb coding the reference picture index value.

Claim 57: The method of claim 56, further comprising truncating the exponential-Golomb coded portion of the reference picture index value prior to decoding the exponential-Golomb coded portion of the reference picture index value.

Claim 58: The method of claim 46,

wherein decoding the at least one bin of the reference picture index value with the context coding mode comprises decoding at least one bin of a unary coded portion of the reference picture index value with the context coding mode;

wherein decoding the at least another bin of the reference picture index value with the bypass coding mode comprises decoding at least another bin of the unary coded portion reference picture index value and a fixed length coded portion of the reference picture index value with the bypass coding mode; and

wherein binarizing the reference picture index value comprises unary coding and fixed length coding the reference picture index value.

Claim 59: The method of claim 58, further comprising truncating the fixed length coded portion of the reference picture index value prior to coding the fixed length coded portion of the reference picture index value.

Claim 60: The method of claim 46,

wherein decoding with the context coding mode comprises selecting one or more probability models for coding the at least one bin of the binarized reference picture index and decoding the at least one bin of the binarized reference picture index using the selected one or more probability models; and

wherein decoding with the bypass coding mode comprises determining a fixed probability and decoding the at least another bin of the binarized reference picture index value using the fixed probability.

Claim 61: An apparatus for decoding a reference picture index syntax element in a video decoding process, the apparatus comprising:

a decoded picture buffer configured to store one or more reference pictures; and

one or more processors configured to:

decode at least one bin of a reference picture index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process, wherein the reference picture index value is associated with a reference picture of the one or more reference pictures;

determine that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode;

decode, in response to determining that the reference picture index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the reference picture index value with a bypass coding mode of the CABAC process; and

binarize the reference picture index value.

Claim 62: The apparatus of claim 61,

wherein to decode at least one bin of the reference picture index value with the context coding mode, the one or more processors are configured to:

decode a first bin (bin0) of the reference picture index value with a first context (ctx0),

decode a second bin (bin1) of the reference picture index with a second context (ctx1), and

wherein to decode at least another bin of the reference picture index value with the bypass coding mode, the one or more processors are configured to:

decode a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 63: The apparatus of claim 62, wherein to binarize the reference picture index value, the one or more processors are configured to binarize the reference picture index value using a combined truncated unary and exponential Golomb code.

Claim 64: The apparatus of claim 61, wherein to decode the at least another bin of the reference picture index value with the bypass coding mode, the one or more processors are

configured to decode the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

Claim 65: The apparatus of claim 61, wherein the one or more processors are further configured to:

decode a first portion of components of a first motion vector difference value and a first portion of components of a second motion vector difference value with the context coding mode;

decode a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode; and

binarize the components of the first motion vector difference value associated with the first reference picture index and the components of the second motion vector difference value associated with a second reference picture index.

Claim 66: The apparatus of claim 65, wherein the one or more processors are further configured to:

group the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

group the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

Claim 67: The apparatus of claim 61,

wherein to decode at least one bin of the reference picture index value with the context coding mode, the one or more processors are configured to:

decode a first bin (bin0) of the reference picture index value with a first context (ctx0),

decode a second bin (bin1) of the reference picture index with a second context (ctx1),

decode a third bin (bin2) of the reference picture index with a third context (ctx2), and

wherein to decode at least another bin of the reference picture index value with the

bypass coding mode, the one or more processors are configured to:

decode all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 68: The apparatus of claim 61,

wherein to decode at least one bin of the reference picture index value with the context coding mode, the one or more processors are configured to:

decode a first bin (bin0) of the reference picture index value with a first context (ctx0), and

wherein to decode at least another bin of the reference picture index value with the bypass coding mode, the one or more processors are configured to:

decode all remaining bins after the first bin (bin0) with the bypass coding mode.

Claim 69: The apparatus of claim 61,

wherein to decode the at least one bin of the reference picture index value with the context coding mode, the one or more processors are configured to:

decode at least one bin of the unary coded reference picture index value with the context coding mode;

wherein to decode the at least another bin of the index value with the bypass coding mode, the one or more processors are configured to:

decode at least another bin of the unary coded reference picture index value with the bypass coding mode; and

wherein to binarize the reference picture index value, the one or more processors are configured to unary code the reference picture index value.

Claim 70: The apparatus of claim 69, wherein to unary code the reference picture index value, the one or more processors are configured to truncated unary code the reference picture index value.

Claim 71: The apparatus of claim 61,

wherein to decode the at least one bin of the reference picture index value with the context coding mode, the one or more processors are configured to:

decode at least one bin of a unary coded portion of the reference picture index value with the context coding mode;

wherein to decode the at least another bin of the reference picture index value with the bypass coding mode, the one or more processors are configured to:

decode at least another bin of the unary coded portion of the reference picture index value and an exponential-Golomb coded portion of the reference picture index value with the bypass coding mode; and

wherein to binarize the reference picture index value, the one or more processors are configured to unary code and exponential-Golomb code the reference picture index value.

Claim 72: The apparatus of claim 71, wherein the one or more processors are further configured to truncate the exponential-Golomb coded portion of the reference picture index value prior to decoding the exponential-Golomb coded portion of the reference picture index value.

Claim 73: The apparatus of claim 61,

wherein to decode the at least one bin of the reference picture index value with the context coding mode, the one or more processors are configured to decode at least one bin of a unary coded portion of the reference picture index value with the context coding mode;

wherein to decode the at least another bin of the reference picture index value with the bypass coding mode, the one or more processors are configured to decode at least another bin of the unary coded portion reference picture index value and a fixed length coded portion of the reference picture index value with the bypass coding mode; and

wherein to binarize the reference picture index value, the one or more processors are configured to unary code and fixed length code the reference picture index value.

Claim 74: The apparatus of claim 73, wherein the one or more processors are further configured to truncate the fixed length coded portion of the reference picture index value prior to coding the fixed length coded portion of the reference picture index value.

Claim 75: The apparatus of claim 61,

wherein to decode with the context coding mode, the one or more processors are configured to select one or more probability models for coding the at least one bin of the binarized reference picture index and decode the at least one bin of the binarized reference

picture index using the selected one or more probability models; and

wherein to decode with the bypass coding mode, the one or more processors are configured to determine a fixed probability and decode the at least another bin of the binarized reference picture index value using the fixed probability.

Claim 76: A non-transitory computer-readable medium storing instructions thereon that, when executed cause one or more processors to:

decode at least one bin of a reference picture index value with a context coding mode of a context-adaptive binary arithmetic coding (CABAC) process;

determine that the binarized reference picture index value comprises more bins than the at least one bin coded with the context coded mode;

decode, in response to determining that the reference picture index value comprises more bins than the at least one bin coded with the context coded mode, at least another bin of the reference picture index value with a bypass coding mode of the CABAC process; and

binarize the reference picture index value.

Claim 77: The computer-readable medium of claim 76,

wherein to decode at least one bin of the reference picture index value with the context coding mode, the instructions cause the one or more processors to:

decode a first bin (bin0) of the reference picture index value with a first context (ctx0),

decode a second bin (bin1) of the reference picture index with a second context (ctx1), and

wherein to decode at least another bin of the reference picture index value with the bypass coding mode, the instructions cause the one or more processors to:

decode a third bin (bin2) and all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 78: The computer-readable medium of claim 77, wherein to binarize the reference picture index value, the instructions cause the one or more processors to binarize the reference picture index value using a combined truncated unary and exponential Golomb code.

Claim 79: The computer-readable medium of claim 76, wherein to decode the at least another bin of the reference picture index value with the bypass coding mode, the instructions cause the one or more processors to decode the at least another bin with at least one of a unary, truncated unary, Golomb, exponential Golomb, or Golomb-Rice coding process.

Claim 80: The computer-readable medium of claim 76, further comprising instructions that cause the one or more processors to:

decode a first portion of components of a first motion vector difference value and a first portion of components of a second motion vector difference value with the context coding mode;

decode a second portion of the components of the first motion vector difference value and a second portion of the components of the second motion vector difference value with the bypass coding mode; and

binarize the components of the first motion vector difference value associated with the first reference picture index and the components of the second motion vector difference value associated with a second reference picture index.

Claim 81: The computer-readable medium of claim 80, further comprising instructions that cause the one or more processors to:

group the first portion of the components of the first motion vector difference value and the first portion of the components of the second motion vector difference value into a first group for coding with the context coding mode, and

group the second portion of the components of first motion vector difference value and the second portion of components of the second motion vector difference value into a second group for coding with the bypass coding mode.

Claim 82: The computer-readable medium of claim 76,

wherein to decode at least one bin of the reference picture index value with the context coding mode, the instructions cause the one or more processors to:

decode a first bin (bin0) of the reference picture index value with a first context (ctx0),

decode a second bin (bin1) of the reference picture index with a second context (ctx1),

decode a third bin (bin2) of the reference picture index with a third context (ctx2), and

wherein to decode at least another bin of the reference picture index value with the bypass coding mode, the instructions cause the one or more processors to:

decode all remaining bins after the third bin (bin2) with the bypass coding mode.

Claim 83: The computer-readable medium of claim 76,

wherein to decode at least one bin of the reference picture index value with the context coding mode, the instructions cause the one or more processors to:

decode a first bin (bin0) of the reference picture index value with a first context (ctx0), and

wherein to decode at least another bin of the reference picture index value with the bypass coding mode, the instructions cause the one or more processors to:

decode all remaining bins after the first bin (bin0) with the bypass coding mode.

Claim 84: The computer-readable medium of claim 76,

wherein to decode the at least one bin of the reference picture index value with the context coding mode, the instructions cause the one or more processors to:

decode at least one bin of the unary coded reference picture index value with the context coding mode;

wherein to decode the at least another bin of the index value with the bypass coding mode, the instructions cause the one or more processors to:

decode at least another bin of the unary coded reference picture index value with the bypass coding mode; and

wherein to binarize the reference picture index value, the instructions cause the one or more processors to unary code the reference picture index value.

Claim 85: The computer-readable medium of claim 84, wherein to unary code the reference picture index value, the instructions cause the one or more processors to truncated unary code the reference picture index value.

Claim 86: The computer-readable medium of claim 76,

wherein to decode the at least one bin of the reference picture index value with the context coding mode, the instructions cause the one or more processors to:

decode at least one bin of a unary coded portion of the reference picture index value with the context coding mode;

wherein to decode the at least another bin of the reference picture index value with the bypass coding mode, the instructions cause the one or more processors to:

decode at least another bin of the unary coded portion of the reference picture index value and an exponential-Golomb coded portion of the reference picture index value with the bypass coding mode; and

wherein to binarize the reference picture index value, the instructions cause the one or more processors to unary code and exponential-Golomb code the reference picture index value.

Claim 87: The computer-readable medium of claim 86, further comprising instructions that cause the one or more processors to truncate the exponential-Golomb coded portion of the reference picture index value prior to decoding the exponential-Golomb coded portion of the reference picture index value.

Claim 88: The computer-readable medium of claim 76,

wherein to decode the at least one bin of the reference picture index value with the context coding mode, the instructions cause the one or more processors to decode at least one bin of a unary coded portion of the reference picture index value with the context coding mode;

wherein to decode the at least another bin of the reference picture index value with the bypass coding mode, the instructions cause the one or more processors to decode at least another bin of the unary coded portion reference picture index value and a fixed length coded portion of the reference picture index value with the bypass coding mode; and

wherein to binarize the reference picture index value, the instructions cause the one or more processors to unary code and fixed length code the reference picture index value.

Claim 89: The computer-readable medium of claim 88, further comprising instructions that cause the one or more processors to truncate the fixed length coded portion of the reference picture index value prior to coding the fixed length coded portion of the reference

picture index value.

Claim 90: The computer-readable medium of claim 76,

wherein to decode with the context coding mode, the instructions cause the one or more processors to select one or more probability models for coding the at least one bin of the binarized reference picture index and decode the at least one bin of the binarized reference picture index using the selected one or more probability models; and

wherein to decode with the bypass coding mode, the instructions cause the one or more processors to determine a fixed probability and decode the at least another bin of the binarized reference picture index value using the fixed probability.

Claim 91: The computer-readable medium of claim 76, further comprising instructions that cause the one or more processors to:

decode a first bin of an inter-prediction direction syntax element with a context coding mode of the CABAC process; and

decode a second bin of the inter-prediction direction syntax element with a bypass coding mode of the CABAC process.