CLAIMS

1. A device for decoding video data, the device comprising: a memory configured to store the video data; one or more processors implemented in circuitry and configured to: determine that a current block of a current picture is encoded in an inter prediction mode; determine a motion vector for the current block based on the inter prediction mode; determine a motion vector precision for the motion vector; identify a current block template within the current picture; search within a search area for a final reference block template that corresponds to the current block template, wherein to search within the search area, the one or more processors are further configured to: identify an initial reference block template based on the motion vector, search other reference block templates around the initial reference block template using a step size that is set to an initial step size, and iteratively reduce the step size from the initial step size until the step size is set to a final step size that equals the motion vector precision; determine a prediction block for the current block based on the final reference block template; decode the current picture based on the determined prediction block; and output a decoded version of the current picture.

2. The device of claim 1, wherein to iteratively reduce the step size from the initial step size until the step size is set to the final step size that equals the motion vector precision, the one or more processors are further configured to: determine that the step size equals the motion vector precision; and in response to determining that the step size equals the motion vector precision, terminate the iteratively reducing of the step size.

3. The device of claim 1, wherein to iteratively reduce the initial step size until the final step size equals the motion vector precision, the one or more processors are further configured to: search the other reference block templates around the initial reference block template using the initial step size to determine a first refined motion vector; iteratively reduce the step size from the initial step size to a finer precision step size; identify a new initial reference block template based on the first refined motion vector; and search a second group of other reference block templates around the new initial reference block template using the finer precision step size to determine a second refined motion vector.

4. The device of claim 1, wherein the initial step size is equal to n-pel and to iteratively reduce the step size from the initial step size until the step size is set to the final step size that equals the motion vector precision, the one or more processors are further configured to reduce the step size from n-pel to n/2-pel.

5. The device of claim 1, wherein all values of the step size used for searching within the search area are greater than or equal to the motion vector precision.

6. The device of claim 1, wherein to iteratively reduce the step size, the one or more processors are further configured to reduce the step size by a factor of ½.

7. The device of claim 1, wherein to iteratively reduce the initial step size until the final step size equals the motion vector precision, the one or more processors are further configured to: search the other reference block templates around the initial reference block template using the initial

step size and a first search pattern to determine a first refined motion vector; identify a new initial reference block template based on the first refined motion vector; and search a second group of other reference block templates around the new initial reference block template using the initial step size and a second search pattern to determine a second refined motion vector.

8. The device of claim 1, wherein the motion vector identifies a top-left sample of a reference block in a reference picture, and the search area is an area that is within 8 samples in an x-direction of the top-left samples and within 8 samples in a y-direction of the top-left sample.

9. The device of claim 1, wherein the motion vector precision and the final step size are less than ⅛ pel.

10. The device of claim 1, wherein the inter prediction mode comprises an AMVP mode and determining the motion vector precision for the current block comprises receiving a syntax element in a bitstream indicating the motion vector precision.

11. The device of claim 1, wherein the inter prediction mode comprises a merge mode and determining the motion vector precision for the current block comprises determining the motion vector precision from a candidate in a merge list.

12. The device of claim 1, wherein to output the decoded version of the current picture, the one or more processors are further configured to output the decoded version of the current picture for display.

13. The device of claim 1, wherein the device for decoding is configured to decode the current block of the current picture as part of performing an encoding process for the current picture, and wherein to output the decoded version of the current picture, the one or more processors are further configured to store the decoded version of the current pictures for use in encoding subsequent blocks of the video data.

14. The device of claim 1, wherein the device comprises a wireless communication device, further comprising a receiver configured to receive encoded video data.

15. The device of claim 14, wherein the wireless communication device comprises a telephone handset and wherein the receiver is configured to demodulate, according to a wireless communication standard, a signal comprising the encoded video data.

16. The device of claim 1, further comprising a display configured to display decoded video data.

17. The device of claim 1, wherein the device comprises one or more of a computer, a mobile device, a broadcast receiver device, or a set-top box.

18. The device of claim 1, wherein the device comprises a camera configured to capture the video data.

19. A method of decoding video data, the method comprising: determining that a current block of a current picture is encoded in an inter prediction mode; determining a motion vector for the current block based on the inter prediction mode; determining a motion vector precision for the motion vector; identifying a current block template within the current picture; searching within a search area for a final reference block template that corresponds to the current block template, wherein searching within the search area comprises: identifying an initial reference block template based on the motion vector, searching other reference block templates around the initial reference block template using a step size that is set to an initial step size, and iteratively reducing the step size from the initial step size until the step size is set to a final step size that equals the motion vector precision; determining a prediction block for the current block based on the final reference block template; decoding the current picture based on the determined prediction block; and outputting a decoded version of the current picture.

20. The method of claim 19, wherein iteratively reducing the step size from the initial step size until the step size is set to the final step size that equals the motion vector precision comprises: determining that the step size equals the motion vector precision; and in response to determining that the step size equals the motion vector precision, terminating iteratively reducing the step size.

21. The method of claim 19, wherein iteratively reducing the initial step size until the final step size equals the motion vector precision comprises: searching the other reference block templates around the initial reference block template using the initial step size to determine a first refined motion vector; iteratively reducing the step size from the initial step size to a finer precision step size; identifying a new initial reference block template based on the first refined motion vector; and searching a second group of other reference block templates around the new initial reference block template using the finer precision step size to determine a second refined motion vector.

22. The method of claim 19, wherein the initial step size is equal to n-pel and iteratively reducing the step size from the initial step size until the step size is set to the final step size that equals the motion vector precision comprises reducing the step size from n-pel to n/2-pel.

23. The method of claim 19, wherein all values of the step size used for searching within the search area are greater than or equal to the motion vector precision.

24. The method of claim 19, wherein the iteratively reducing the step size comprises reducing the step size by a factor of ½.

25. The method of claim 19, wherein iteratively reducing the initial step size until the final step size equals the motion vector precision comprises: searching the other reference block templates around the initial reference block template using the initial step size and a first search pattern to determine a first refined motion vector; identifying a new initial reference block template based on the first refined motion vector; and searching a second group of other reference block templates around the new initial reference block template using the initial step size and a second search pattern to determine a second refined motion vector.

26. The method of claim 19, wherein the motion vector identifies a top-left sample of a reference block in a reference picture, and the search area is an area that is within 8 samples in an x-direction of the top-left samples and within 8 samples in a y-direction of the top-left sample.

27. The method of claim 19, wherein the motion vector precision and the final step size are less than ⅛ pel.

28. The method of claim 19, wherein the inter prediction mode comprises an AMVP mode and determining the motion vector precision for the current block comprises receiving a syntax element in a bitstream indicating the motion vector precision.

29. The method of claim 19, wherein the inter prediction mode comprises a merge mode and determining the motion vector precision for the current block comprises determining the motion vector precision from a candidate in a merge list.

30. The method of claim 19, wherein outputting the decoded version of the current picture comprises outputting the decoded version of the current picture for display.

31. The method of claim 19, wherein the method of decoding is performed as part of a video encoding processing, and wherein outputting the decoded version of the current picture comprises storing the decoded version of the current pictures for use in encoding subsequent blocks of the video data.

32. A computer-readable storage medium storing instructions that when executed by one or more processors cause the one or more processors to: determine that a current block of a current picture is encoded in an inter prediction mode; determine a motion vector for the current block based on the inter prediction mode; determine a motion vector precision for the motion vector; identify a current block template within the current picture; search within a search area for a final reference block template that corresponds to the current block template, wherein to search within the search area, the instructions cause the one or more processors to: identify an initial reference block template based on the motion vector, search other reference block templates around the initial reference block template using a step size that is set to an initial step size, and iteratively reduce the step size from the initial step size until the step size is set to a final step size that equals the motion vector precision; determine a prediction block for the current block based on the final reference block template; decode the current picture based on the determined prediction block; and output a decoded version of the current picture.

33. The computer-readable storage medium of claim 32, wherein to iteratively reduce the step size from the initial step size until the step size is set to the final step size that equals the motion vector precision, the one or more processors are further configured to: determine that the step size equals the motion vector precision; and in response to determining that the step size equals the motion vector precision, terminate the iteratively reducing of the step size.

34. The computer-readable storage medium of claim 32, wherein to iteratively reduce the initial step size until the final step size equals the motion vector precision, the one or more processors are further configured to: search the other reference block templates around the initial reference

block template using the initial step size to determine a first refined motion vector; iteratively reduce the step size from the initial step size to a finer precision step size; identify a new initial reference block template based on the first refined motion vector; and search a second group of other reference block templates around the new initial reference block template using the finer precision step size to determine a second refined motion vector.

35. The computer-readable storage medium of claim 32, wherein the initial step size is equal to n-pel and to iteratively reduce the step size from the initial step size until the step size is set to the final step size that equals the motion vector precision, the one or more processors are further configured to reduce the step size from n-pel to n/2-pel.

36. The computer-readable storage medium of claim 32, wherein all values of the step size used for searching within the search area are greater than or equal to the motion vector precision.

37. The computer-readable storage medium of claim 32, wherein to iteratively reduce the step size, the one or more processors are further configured to reduce the step size by a factor of ½.

38. The computer-readable storage medium of claim 32, wherein to iteratively reduce the initial step size until the final step size equals the motion vector precision, the one or more processors are further configured to: search the other reference block templates around the initial reference block template using the initial step size and a first search pattern to determine a first refined motion vector; identify a new initial reference block template based on the first refined motion vector; and search a second group of other reference block templates around the new initial reference block template using the initial step size and a second search pattern to determine a second refined motion vector.

39. The computer-readable storage medium of claim 32, wherein the motion vector identifies a top-left sample of a reference block in a reference picture, and the search area is an area that is within 8 samples in an x-direction of the top-left samples and within 8 samples in a y-direction of the top-left sample.

40. The computer-readable storage medium of claim 32, wherein the motion vector precision and the final step size are less than ⅛ pel.

41. The computer-readable storage medium of claim 32, wherein the inter prediction mode comprises an AMVP mode and determining the motion vector precision for the current block comprises receiving a syntax element in a bitstream indicating the motion vector precision.

42. The computer-readable storage medium of claim 32, wherein the inter prediction mode comprises a merge mode and determining the motion vector precision for the current block comprises determining the motion vector precision from a candidate in a merge list.

43. The computer-readable storage medium of claim 32, wherein to output the decoded version of the current picture, the one or more processors are further configured to output the decoded version of the current picture for display.

44. The computer-readable storage medium of claim 32, wherein the device for decoding is configured to decode the current block of the current picture as part of performing an encoding process for the current picture, and wherein to output the decoded version of the current picture, the one or more processors are further configured to store the decoded version of the current pictures for use in encoding subsequent blocks of the video data.

45. A device for decoding video data, the device comprising: means for determining that a current block of a current picture is encoded in an inter prediction mode; means for determining a motion vector for the current block based on the inter prediction mode; means for determining a motion vector precision for the motion vector; means for identifying a current block template within the current picture; means for searching within a search area for a final reference block template that corresponds to the current block template, wherein the means for searching within the search area comprises: means for identifying an initial reference block template based on the motion vector, means for searching other reference block templates around the initial reference block template using a step size that is set to an initial step size, and means for iteratively reducing the step size from the initial step size until the step size is set to a final step size that equals the motion vector precision; means for determining a prediction block for the current block based on the final reference block template; means for decoding the current picture based on the determined prediction block; and means for outputting a decoded version of the current picture.