CLAIMS

1. An encoding apparatus for determining a predictor for encoding a block of a video image, the encoding apparatus comprising:

a memory storing instructions; and

a processor configured to execute the instructions to:

obtain an initial motion vector for the block;

perform a search to obtain a refined motion vector for the block based on the initial motion vector; and

determine, after the search, a predictor for the block according to the refined motion vector using interpolation filtering with an interpolation filter,

wherein the interpolation filtering comprises using at least one sample value of an integer sample position located inside a window and a padded sample value for an integer sample position located outside the window,

wherein the padded sample value is based on at least one sample value of a sample located inside the window, and

wherein the window is defined as an extension by a number of rows and a number of columns of a block located on a position of the initial motion vector.

2. A decoding apparatus for determining a predictor for decoding a block of a video image, the decoding apparatus comprising

a memory storing instructions; and

a processor configured to execute the instructions to:

obtain an initial motion vector for the block;

perform a search to obtain a refined motion vector for the prediction block based on the initial motion vector; and

determine, after the search, a predictor for the block according to the refined motion vector using interpolation filtering with an interpolation filter,

wherein the interpolation filtering comprises using at least one sample value of an integer sample position located inside a window and a padded sample value for an integer sample position located outside the window,

wherein the padded sample value is based on at least one sample value of a sample located inside the window, and

wherein the window is defined as an extension by a number of rows and a number of columns of a block located on a position of the initial motion vector.

3. An encoding method for determining a predictor for encoding a block of a video image, the encoding method comprising:

obtaining an initial motion vector for the block;

performing a search to obtain a refined motion vector for the block based on the initial motion vector; and

determining, after the search, a predictor for the block according to the refined motion vector using interpolation filtering with an interpolation filter,

wherein the interpolation filtering comprises using at least one sample value of an integer sample position located inside a window and a padded sample value for an integer sample position located outside the window,

wherein the padded sample value is based on at least one sample value of a sample located inside the window, and

wherein the window is defined as an extension by a number of rows and a number of columns of a block located on a position of the initial motion vector.

4. A decoding method for determining a predictor for decoding a block of a video image, the decoding method comprising:

obtaining an initial motion vector for the block;

performing a search to obtain a refined motion vector for the prediction block based on the initial motion vector; and

determining, after the search, a predictor for the block according to the refined motion vector using interpolation filtering with an interpolation filter,

wherein the interpolation filtering comprises using at least one sample value of an integer sample position located inside a window and a padded sample value for an integer sample position located outside the window,

wherein the padded sample value is based on at least one sample value of a sample located inside the window, and

wherein the window is defined as an extension by a number of rows and a number of columns of a block located on a position of the initial motion vector.

5. The decoding method according to claim 4, wherein the search comprises determining a refinement value for the initial motion vector based on a search space of candidate motion vectors, and

wherein the refined motion vector is determined based on the initial motion vector and the refinement value.

6. The decoding method according to claim 5, wherein the search space is located on a position defined by the initial motion vector.

7. The decoding method according to claim 4, further comprising obtaining a difference between the block and the predictor.

8. The decoding method according to claim 7, further comprising reconstructing the block based on the predictor and the difference between the block and the predictor.

9. The decoding method according to claim 4, wherein the padded sample value is determined by mirroring, with respect to an axis of the interpolation filter, a value of the corresponding integer sample position.

10. The decoding method according to claim 4, wherein the interpolation filter is a one-dimensional filter or a separable two-dimensional filter.

11. The decoding method according to claim 4, wherein the window is formed by all integer sample positions accessible for obtaining the predictor in a position specified by the initial motion vector.

12. The decoding method according to claim 4, wherein the window is defined by its vertical and/or horizontal size with respect to the vertical and horizontal length of the interpolation filter that is used for determining the predictor.

13. The decoding method according to claim 4, wherein the padded sample value for the integer sample position outside of the window is determined to be equal to the sample value of the at least one used integer sample position located inside the window, wherein the sample value of the at least one used integer sample position located inside the window is closest to the integer sample position located outside the window.

14. The decoding method according to claim 4, wherein the number of sample values to be padded depends on the difference between the initial motion vector and the refined motion vector.

15. The decoding method according to claim 5, wherein determining the refinement of the initial motion vector comprises template matching with a template or bilateral matching, wherein the template or bilateral matching comprises:

accessing sample values at integer sample positions within a further window, the further window including said search space and further integer sample positions accessible for the template or bilateral matching,

padding at least one sample value at an integer sample position located out of the further window by a padded sample value which is based on at least one sample within said further window, and

using the accessed integer sample position values as well as the padded sample values to perform the template or bilateral matching.

16. The decoding method according to claim 15, wherein:

the search space includes at least one fractional sample position with a value obtained by interpolation filtering with a filter of a predefined tap-size; and

the interpolation filtering uses said accessed integer sample position values and the at least one padded sample value to obtain said at least one fractional sample position value.

17. The decoding method according to claim 16, wherein the padded sample value used in the template or bilateral matching is determined by mirroring with respect to an axis of a filter the value of the corresponding integer sample position.

18. The decoding method according to claim 16, wherein the padded sample value used in the template or bilateral matching is determined to be equal to the value on a closest of the accessed integer sample positions.

19. The decoding method according to claim 16, wherein the further window is defined by its vertical and/or horizontal size with respect to the search space.

20. The decoding method according to claim 16, wherein the further window is the same as said window.

21. The decoding method according to claim 5, wherein the refinement value is determined by bilateral matching and obtaining at least two initial motion vectors pointing to positions in different reference pictures and forming a pair of initial motion vectors.

22. The decoding method according to claim 5, wherein the refinement value is determined by template matching and determining the motion vector further comprises:

obtaining a template for the block; and

determining the refinement value to the initial motion vector by template matching with the template in the search space.

23. A non-transitory computer readable medium storing instructions which when executed on a processor cause the processor to perform the method according to claim 4.