CLAIMS

1. An apparatus for determination of a motion vector for a block, the apparatus comprising a processing circuitry configured to:

obtain an initial motion vector;

determine a refinement of the initial motion vector by bilateral matching in a search space, wherein

the search space is located on a position given by the initial motion vector and includes one or more fractional sample positions, wherein each of the fractional sample positions belonging to the search space is obtained by interpolation filtering with a filter of a predefined tap-size assessing integer samples only within a window, said window being formed by integer samples accessible for the bilateral matching in said search space.

2. The apparatus according to claim 1, wherein the window is defined as an extension on at least one of: left and right; and top and bottom of the block.

3. The apparatus according to claim 1 or 2, wherein the window is defined around a position pointed by the initial motion vector and identifies a number of samples to be accessed for performing the refinement of the initial motion vector.

4. The apparatus according to any of the preceding claims, wherein the window is defined as N integer sample columns and M integer sample rows relative to the block initial motion vector, at least one of N and M being non-zero integer values.

5. The apparatus according to any of the preceding claims, wherein

the processing circuitry is configured to determine the refinement of the initial motion vector by bilateral matching in a search space which is iteratively extended in a direction given by one of more best matching positions of the search space in a most recent iteration,

wherein the window is defined by a predefined maximum number of the iterations.

6. The apparatus according to any of the preceding claims, wherein the search space includes a rectangular sub-window of the window such that all integer samples accessed for interpolation filtering of each fractional sample in the sub-window are located within said window for the interpolation filter with the predefined tap-size.

7. The apparatus according to any of claims 1 to 4, wherein the search space includes a rectangular search sub-window of the window, wherein the refinement of the initial motion vector is determined by bilateral matching in the rectangular search sub-window such that the integer samples accessed for interpolation filtering of each fractional sample in the search sub-window are located within said window for the interpolation filter with the predefined tap-size.

8. The apparatus according to claim 7, wherein

the processing circuitry is configured to determine the refinement of the initial motion vector by bilateral matching in a search space which is iteratively extended in a direction given by one of more best matching positions of the search space in a most recent iteration, wherein the iteration is ended when at least one sample within the search space of the most recent iteration is outside the search sub-window.

9. The apparatus according to claim 6, wherein the interpolation filter is a one-dimensional filter assessing K either horizontal or vertical integer samples when the fractional position is located on a respective horizontal or vertical line of integer samples.

10. The apparatus according to claim 7, wherein the search space further includes fractional positions located outside the sub-window either:

- adjacent on the top or on the bottom of the sub-window and located on the horizontal line of integer samples or
- adjacent on the left or on the right hand side of the sub-window and located on the vertical line of integer samples.

11. A method for determination of a motion vector for a block including the steps of:

obtaining an initial motion vector;

determining a refinement of the initial motion vector by bilateral matching in a search space, wherein

said search space is located on a position given by the initial motion vector and includes one or more fractional sample positions, wherein each of the fractional sample positions belonging to the search space is obtained by interpolation filtering with a filter of a predefined tap-size assessing integer samples only within a window, said window being formed by integer samples accessible for the bilateral matching in said search space.

12. The method according to claim 11, wherein the window is defined as N integer sample columns and M integer sample rows relative to the block initial motion vector, N and M being non-zero integer values.

13. The method according to claim 11 or 12, wherein

the refinement of the initial motion vector is determined by bilateral matching in a search space which is iteratively extended in a direction given by one of more best matching positions of the search space in a most recent iteration,

wherein the window is defined by a predefined maximum number of the iterations.

14. The method according to any of claims 11 to 13, wherein the search space includes a rectangular sub-window of the window such that all integer samples accessed for interpolation filtering of each fractional sample in the sub-window are located within said window for the interpolation filter with the predefined tap-size.

15. The method according to claim 11 or 12, wherein the search space includes a rectangular search sub-window of the window, wherein the refinement of the initial motion vector is determined by bilateral matching in the rectangular search sub-window

such that the integer samples accessed for interpolation filtering of each fractional sample in the search sub-window are located within said window for the interpolation filter with the predefined tap-size.

16. The method according to claim 15, wherein

the refinement of the initial motion vector is determined by bilateral matching in a search space which is iteratively extended in a direction given by one of more best matching positions of the search space in a most recent iteration, wherein the iteration is ended when at least one sample within the search space of the most recent iteration is outside the search sub-window.

17. The method according to claim 14, wherein the interpolation filter is a one-dimensional filter assessing K either horizontal or vertical integer samples when the fractional position is located on a respective horizontal or vertical line of integer samples.

18. The method according to claim 17, wherein the search space further includes fractional positions located outside the sub-window either:

- adjacent on the top or on the bottom of the sub-window and located on the horizontal line of integer samples or
- adjacent on the left or on the right hand side of the sub-window and located on the vertical line of integer samples.

19. A method for encoding a block of a video image, the method comprising:

splitting the video image to obtain the block;

obtaining an initial motion vector and a template for the prediction block;

determining a refinement of the initial motion vector by bilateral matching in a search space, wherein

said search space is located on a position given by the initial motion vector and includes one or more fractional sample positions, wherein each of the fractional sample positions

belonging to the search space is obtained by interpolation filtering with a filter of a predefined tap-size assessing integer samples only within a window, said window being formed by integer samples accessible for the bilateral matching in said search space.; and

generating a bitstream comprising the block encoded based on the refinement.

20. Computer readable medium storing instructions which when executed on a processor cause the processor to perform the methods according to any of claims 11 to 19.