

CLAIMS

1. An image processing device (501, 601, 701, 801) for use in an image encoder (600) and/or an image decoder (700), for deblocking a block edge (904, 905, 1201, 1303) between a first coding block (901, 1301) and a second coding block (902, 1302) of an image (900, 1200, 1300) encoded with a block code, wherein the first coding block (901, 1301) has a block size SA perpendicular to the block edge (904, 905, 1201, 1303), wherein the second coding block (902, 1302) has a block size SB perpendicular to the block edge (904, 905, 1201, 1303), wherein the image processing device (501, 601, 701, 801) comprises a filter (502, 602, 702, 802) for filtering the block edge (904, 905, 1201, 1303), configured to
- modify at most a number MA of sample values of the first coding block (901, 1301), adjacent to the block edge (904, 905, 1201, 1303), as first filter output values,
 - modify at most a number MB of sample values of the second coding block (902, 1302), adjacent to the block edge (904, 905, 1201, 1303), as second filter output values,
 - use at most a number IA of sample values of the first coding block (901, 1301), adjacent to the block edge (904, 905, 1201, 1303), as first filter input values, for calculating the first filter output values and/or the second filter output values,
 - use at most a number IB of sample values of the second coding block (902, 1302), adjacent to the block edge (904, 905, 1201, 1303), as second filter input values, for calculating the first filter output values and/or the second filter output values,
- wherein $IA \neq IB$ and $MA \neq MB$.
2. The image processing device (501, 601, 701, 801) of claim 1, wherein $SA \neq SB$.
3. The image processing device (501, 601, 701, 801) of claim 2, wherein the image processing device (501, 601, 701, 801) comprises a determiner (803), configured to determine if the block edge (904, 905, 1201, 1303) is to be filtered and/or if a strong filtering or a weak filtering is to be performed, based upon
- at most a number DA of sample values of the first coding block (901, 1301), adjacent to the block edge (904, 905, 1201, 1303), as first filter decision values, and

- at most a number DB of sample values of the second coding block (902, 1302), adjacent to the block edge (904, 905, 1201, 1303), as second filter decision values.
4. The image processing device (501, 601, 701, 801) of claim 3,
- 5 wherein the first filter input values are identical to the first filter decision values, and wherein the second filter input values are identical to the second filter decision values.
5. The image processing device (501, 601, 701, 801) of any of the claims 2 to 3, wherein if $SA = 4$, the filter (502, 602, 702, 802) is configured to set
- 10 - IA to 3, and
- MA to 1.
6. The image processing device (501, 601, 701, 801) of any of the claims 2 to 5, wherein if $SB = 8$, the filter (502, 602, 702, 802) is configured to set
- 15 - IB to 4, and
- MB to 3 or 4.
7. The image processing device (501, 601, 701, 801) of any of the claims 2 to 5, wherein if $SB = 16$, the filter (502, 602, 702, 802) is configured to set
- 20 - IB to 8, and
- MB to 7 or 8.
8. The image processing device (501, 601, 701, 801) of any of the claims 2 to 5, wherein if $SB > 4$, the filter (502, 602, 702, 802) is configured to set
- 25 - IB to $SB/2$, and
- MB to $SB/2$ or $SB/2 - 1$.
9. The image processing device (501, 601, 701, 801) of any of the claims 2 to 4, wherein if $SA = 8$, the filter (502, 602, 702, 802) is configured to set
- 30 - IA to $SA/2$, and
- MA to $SA/2$ or $SA/2 - 1$.
10. The image processing device (501, 601, 701, 801) of claim 9, wherein if $SB > 8$, the filter (502, 602, 702, 802) is configured to set

- IB to SB/2, and
- MB to SB/2 or SB/2 - 1.

11. The image processing device (501, 601, 701, 801) of any of any of claims 1,
5 wherein

- if the block edge (1201) is a horizontal block edge (1201), and
- if the block edge (1201) overlaps with a coding tree unit, CTU, block edge of the image (1200), and
- if the second coding block is a current block and the first coding block is a

10 neighboring block of said current block, the filter (502, 602, 702, 802) is configured to set

- IA to 4, and
- MA to 3 or 4.

15 12. An encoder for encoding an image (900, 1300), comprising a image processing device (501, 601, 701, 801) of any of the claims 1 to 11.

13. A decoder for decoding an image (900, 1300), comprising a image processing device (501, 601, 701, 801) of any of the claims 1 to 11.

20 14. A deblocking method, for deblocking a block edge (904, 905, 1201, 1303) between a first coding block (901, 1301) and a second coding block (902, 1302) of an image (900, 1200, 1300) encoded with a block code, in an image encoding and/or an image decoding (1400),

25 wherein the first coding block (901, 1301) has a block size SA perpendicular to the block edge (904, 905, 1201, 1303),

wherein the second coding block (902, 1302) has a block size SB perpendicular to the block edge (904, 905, 1201, 1303),

wherein the decoding comprises a filtering, comprising:

30 - modifying (1403) at most a number MA of sample values of the first coding block (901, 1301), adjacent to the block edge (904, 905, 1201, 1303), as first filter output values,

- modifying (1404) at most a number MB of sample values of the second coding block (902, 1302), adjacent to the block edge (904, 905, 1201, 1303), as second filter output values,
 - using (1401) at most a number IA of sample values of the first coding block (901, 1301), adjacent to the block edge (904, 905, 1201, 1303), as first filter input values, for calculating the first filter output values and/or the second filter output values,
 - using (1402) at most a number IB of sample values of the second coding block (902, 1302), adjacent to the block edge (904, 905, 1201, 1303), as second filter input values, for calculating the first filter output values and/or the second filter output values,
- 10 wherein $IA \neq IB$ and $MA \neq MB$.

15 15. An encoding method for encoding an image (900, 1300), comprising a deblocking method of claim 14.

- 15 16. A decoding method for decoding an image (900, 1300), comprising a deblocking method of claim 14.

17. A computer program product with a program code for performing the method according to any of the claims 14 to 16 when the computer program runs on a
20 computer.