CLAIMS

1. A method implemented by a video decoder and comprising:

receiving, by the video decoder, a video bitstream comprising a picture and loop_filter_across_subpic_enabled_flag, wherein the picture comprises a subpicture; and

applying a deblocking filter process to all subblock edges and transform block edges of the picture except edges that coincide with boundaries of the subpicture when loop_filter_across_subpic_enabled_flag is equal to 0;

wherein

the subpicture comprises a first subpicture with loop_filter_across_subpic_enabled_flag equal to 0 and a second subpicture with loop_filter_across_subpic_enabled_flag equal to 1, wherein the right boundary of the first subpicture is also the left boundary of the second subpicture or the bottom boundary of the first subpicture is also the top boundary of the second subpicture;

wherein

for the first subpicture with loop_filter_across_subpic_enabled_flag equal to 0, the deblocking filter process is not applied to blocks at a boundary shared by the first subpicture and the second subpicture;

for the second subpicture with loop_filter_across_subpic_enabled_flag equal to 1, the deblocking filter process is applied to blocks at the boundary shared by the first subpicture and the second subpicture.

2. The method of claim 1, wherein loop_filter_across_subpic_enabled_flag equal to 1 specifies that in-loop filtering operations may be performed across boundaries of a subpicture in each coded picture in a coded video sequence (CVS).

3. The method of any one of claims 1-2, wherein loop_filter_across_subpic_enabled_flag equal to 0 specifies that in-loop filtering operations are not performed across boundaries of a subpicture in each coded picture in a coded video sequence (CVS).

4. A video decoder comprising:

a memory configured to store instructions; and

a processor coupled to the memory and configured to execute the instructions to perform any one of claims 1-3.

5. A computer program comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video decoder to perform any one of claims 1-3.

6. A method implemented by a video encoder and comprising:

generating, by the video encoder, loop_filter_across_subpic_enabled_flag so that a deblocking filter process is applied to all subblock edges and transform block edges of a picture except edges that coincide with boundaries of a subpicture when loop_filter_across_subpic_enabled_flag is equal to 0;

encoding, by the video encoder, loop_filter_across_subpic_enabled_flag into a video bitstream;

wherein

the subpicture comprises a first subpicture with loop_filter_across_subpic_enabled_flag equal to 0 and a second subpicture with loop_filter_across_subpic_enabled_flag equal to 1, wherein the right boundary of the first subpicture is also the left boundary of the second subpicture or the bottom boundary of the first subpicture is also the top boundary of the second subpicture;

wherein

for the first subpicture with loop_filter_across_subpic_enabled_flag equal to 0, the deblocking filter process is not applied to blocks at a boundary shared by the first subpicture and the second subpicture;

for the second subpicture with loop_filter_across_subpic_enabled_flag equal to 1, the deblocking filter process is applied to blocks at the boundary shared by the first subpicture and the second subpicture.

7. The method of claim 6, wherein loop_filter_across_subpic_enabled_flag equal to 1 specifies that in-loop filtering operations may be performed across boundaries of a subpicture in each coded picture in a coded video sequence (CVS).

8. The method of any one of claims 6-7, wherein loop_filter_across_subpic_enabled_flag equal to 0 specifies that in-loop filtering operations are not performed across boundaries of a subpicture in each coded picture in a coded video sequence (CVS).

9. The method of any one of claims 6-8, further comprising:

generating seq_parameter_set_rbsp;

including loop_filter_across_subpic_enabled_flag in seq_parameter_set_rbsp; and

further encoding loop_filter_across_subpic_enabled_flag into the video bitstream by encoding seq_parameter_set_rbsp into the video bitstream.

10. A video encoder comprising:

a memory configured to store instructions; and

a processor coupled to the memory and configured to execute the instructions to perform any one of claims 6-9.

11. A computer program comprising computer-executable instructions for storage on a non-transitory medium and that, when executed by a processor, cause a video encoder to perform any one of claims 6-9.

12. A video coding system comprising:

an encoder; and

a decoder,

wherein the encoder or the decoder is configured to perform any one of claims 1-3 or 6-9.

13. A coding apparatus, comprising:

a receiver configured to receive a picture to encode or to receive a bitstream to decode;

a transmitter coupled to the receiver, the transmitter configured to transmit the bitstream to a decoder or to transmit a decoded image to a display;

a memory coupled to at least one of the receiver or the transmitter, the memory configured to store instructions; and

a processor coupled to the memory, the processor configured to execute the instructions stored in the memory to perform the method in any one of claims 1-3 or any one of claims 6-9.

14. A means for coding, comprising:

receiving means configured to receive a picture to encode or to receive a bitstream to decode;

transmission means coupled to the receiving means, the transmission means configured to transmit the bitstream to a decoding means or to transmit a decoded image to a display means;

storage means coupled to at least one of the receiving means or the transmission means, the storage means configured to store instructions; and

processing means coupled to the storage means, the processing means configured to execute the instructions stored in the storage means to perform the method in any one of claims 1-3 or any one of claims 6-9.

15. A storage medium storing a bitstream which is obtained by using a decoding/encoding method that using the method of any one of claims 1-3 or any one of claims 6-9.

16. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program that can be executed by a processor, and when the computer program is executed by the processor, the processor performs the method according to any one of claims 1-3 or any one of claims 6-9.

17. A coder comprising processing circuitry for carrying out the method according to any one of claims 1-3 or any one of claims 6-9.