

CLAIMS

1. A method of processing video data, comprising:
 - determining, that a non-linear adaptive loop filtering operation is applied for a current video region of a video, wherein the current video region is a coding tree block;
 - deriving at least one first filtering index for the current video region and deriving one or more first filtering parameters based on the at least one first filtering index;
 - deriving one or more first clipping parameters from a clipping parameter set based on the at least one first filtering index;
 - performing a clipping operation which is part of the non-linear adaptive loop filtering operation based on the one or more first clipping parameters, wherein the one or more first clipping parameters are used to clip the differences between reference sample values of a current sample value of the current video region and the current sample value before applying the one or more first filtering parameters; and
 - performing a conversion between the current video region and a bitstream of the video based on the non-linear adaptive loop filtering operation;
 - wherein the clipping parameter set is constructed based on a bit-depth and a clipping index based on a predefined table, wherein in the predefined table, a value of one clipping parameter corresponding to a first clipping index for a given bit-depth is derived based on a value of another clipping parameter corresponding to the first clipping index for another bit-depth.
2. The method of claim 1, wherein a shifting operation is used for deriving clipping parameter values of the clipping parameter set.
3. The method of claim 1 or 2, wherein the clipping index is associated with a field in the bitstream.
4. The method of any of claims 1-3, wherein the clipping index is determined using a pre-defined rule.

5. The method of any of claims 1-4, wherein for the clipping parameter set, different clipping parameter values are used for different bit-depth under a given value of the clipping index.

6. The method of any of claims 1-5, wherein in the predefined table, the value of the one clipping parameter is derived based on applying a shifting operation on the value of the another clipping parameter.

7. The method of any of claims 1-6, wherein the at least one first filtering index is derived based on multiple sample differences in different directions.

8. The method of claim 7, wherein the current video region is split into multiple $M \times M$ video region, and the multiple sample differences in different directions are derived for every $M \times M$ video sub-region, and wherein M is equal to 2 or 4.

9. The method of claim 8, wherein the multiple sample differences in different directions are derived based on $1:N$ subsampling rate, wherein N is great than 1.

10. The method of any of claims 1-9, wherein the one or more first filtering parameters and the one or more first clipping parameters are derived based on a same adaptation parameter set identification.

11. The method of any of claims 1-10, wherein the conversion includes encoding the current video region into the bitstream.

12. The method of any of claims 1-10, wherein the conversion includes decoding the current video region from the bitstream.

13. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

determine, that a non-linear adaptive loop filtering operation is applied for a current video region of a video, wherein the current video region is a coding tree block;

derive at least one first filtering index for the current video region and derive one or more first filtering parameters based on the at least one first filtering index;

derive one or more first clipping parameters from a clipping parameter set based on the at least one first filtering index,

perform a clipping operation which is part of the non-linear adaptive loop filtering operation based on the one or more first clipping parameters, wherein the one or more first clipping parameters are used to clip the differences between reference sample values of a current sample value of the current video region and the current sample value before applying the one or more first filtering parameters; and

perform a conversion between the current video region and a bitstream of the video based on the non-linear adaptive loop filtering operation;

wherein the clipping parameter set is constructed based on a bit-depth and a clipping index based on a predefined table, wherein in the predefined table, a value of one clipping parameter corresponding to a first clipping index for a given bit-depth is derived based on a value of another clipping parameter corresponding to the first clipping index for another bit-depth.

14. The apparatus of claim 13, wherein a shifting operation is used for deriving clipping parameter values of the clipping parameter set.

15. The apparatus of claim 13, wherein for the clipping parameter set, different clipping parameter values are used for different bit-depth under a given value of the clipping index.

16. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

determine, that a non-linear adaptive loop filtering operation is applied for a current video region of a video, wherein the current video region is a coding tree block;

derive at least one first filtering index for the current video region and derive one or more first filtering parameters based on the at least one first filtering index;

derive one or more first clipping parameters from a clipping parameter set based on the at least one first filtering index,

perform a clipping operation which is part of the non-linear adaptive loop filtering operation based on the one or more first clipping parameters, wherein the one or more first clipping parameters are used to clip the differences between reference sample values of a current sample value of the current video region and the current sample value before applying the one or more first filtering parameters; and

perform a conversion between the current video region and a bitstream of the video based on the non-linear adaptive loop filtering operation;

wherein the clipping parameter set is constructed based on a bit-depth and a clipping index based on a predefined table, wherein in the predefined table, a value of one clipping parameter corresponding to a first clipping index for a given bit-depth is derived based on a value of another clipping parameter corresponding to the first clipping index for another bit-depth.

17. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

determining, that a non-linear adaptive loop filtering operation is applied for a current video region of a video, wherein the current video region is a coding tree block;

deriving at least one first filtering index for the current video region and deriving one or more first filtering parameters based on the at least one first filtering index;

deriving one or more first clipping parameters from a clipping parameter set based on the at least one first filtering index,

performing a clipping operation which is part of the non-linear adaptive loop filtering operation based on the one or more first clipping parameters, wherein the one or more first clipping parameters are used to clip the differences between reference sample values of a current sample value of the current video region and the current sample value before applying the one or more first filtering parameters; and

generating a bitstream of the video based on the clipping operation;

wherein the clipping parameter set is constructed based on a bit-depth and a clipping index based on a predefined table, wherein in the predefined table, a value of one clipping parameter

corresponding to a first clipping index for a given bit-depth is derived based on a value of another clipping parameter corresponding to the first clipping index for another bit-depth.