CLAIMS

What is claimed is:

1. A method of processing video data, comprising:

determining, for a conversion between a current video unit of a video comprising one or more samples and a bitstream of the video, a padding process used for padding unavailable samples during application of a cross-component adaptive loop filtering (CC-ALF) tool to at least some samples of the current video unit, wherein the current video unit corresponds to a current coding tree unit; and

performing the conversion based on the determining;

wherein the CC-ALF tool is applied to a first color component of the current video unit and includes correcting sample values of the first color component of the current video unit using sample values of a second color component of the current video unit; and

wherein when a first unavailable sample is located in a below-right coding tree unit of the current video unit and a below coding tree unit of the current video unit and a right coding tree unit of the current video unit are both available, padding the first unavailable sample with its nearest neighboring sample located in the below coding tree unit;

wherein the below-right coding tree unit is located in a second slice that is different from a first slice in which the current video unit is located, the below coding tree unit and the right coding tree unit are both located in the first slice;

wherein when a second unavailable sample is located in an above-left coding tree unit of the current video unit and an above coding tree unit of the current video unit and a left coding tree unit of the current video unit are both available, padding the second unavailable sample with its nearest neighboring sample located in the above coding tree unit; and

wherein the above-left coding tree unit is located in a third slice that is different from the first slice and the second slice, and the above coding tree unit and the left coding tree unit are both located in the first slice.

2. The method claim 1, wherein the padding process corresponds to a mirrored padding that is applied on the unavailable samples at one or more ALF virtual boundaries associated with the usage of the CC-ALF tool.

3. The method of claim 1, wherein the padding process corresponds to a one-side padding that is applied on the unavailable samples at one of: a slice, a tile, a picture, a sub-picture, or a 360-degree virtual boundary associated with the application of the CC-ALF.

4. The method of claim 1, wherein the padding process corresponds to a one-side padding that is applied on one or more boundaries except at one or more ALF virtual boundaries associated with the application of the CC-ALF.

5. The method of any of claims 1-4, wherein the conversion includes encoding the video into the bitstream.

6. The method of any of claims 1-4, wherein the conversion includes decoding the video from the bitstream.

7. 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, for a conversion between a current video unit of a video comprising one or more samples and a bitstream of the video, a padding process used for padding unavailable samples during application of a cross-component adaptive loop filtering (CC-ALF) tool to at least some samples of the current video unit, wherein the current video unit corresponds to a current coding tree unit; and

perform the conversion based on the determination;

wherein the CC-ALF tool is applied to a first color component of the current video unit and includes correcting sample values of the first color component of the current video unit using sample values of a second color component of the current video unit;

wherein when a first unavailable sample is located in a below-right coding tree unit of the current video unit and a below coding tree unit of the current video unit and a right coding tree unit of the current video unit are both available, padding the first unavailable sample with its nearest neighboring sample located in the below coding tree unit;

wherein the below-right coding tree unit is located in a second slice that is different from a first slice in which the current video unit is located, the below coding tree unit and the right coding tree unit are both located in the first slice;

wherein when a second unavailable sample is located in an above-left coding tree unit of the current video unit and an above coding tree unit of the current video unit and a left coding tree unit of the current video unit are both available, padding the second unavailable sample with its nearest neighboring sample located in the above coding tree unit;

wherein the above-left coding tree unit is located in a third slice that is different from the first slice and the second slice, the above coding tree unit and the left coding tree unit are both located in the first slice.

8. The apparatus of claim 7, wherein the padding process corresponds to a mirrored padding that is applied on the unavailable samples at one or more ALF virtual boundaries associated with the usage of the CC-ALF tool; or

wherein the padding process corresponds to a one-side padding that is applied on the unavailable samples at one of: a slice, a tile, a picture, a sub-picture, or a 360-degree virtual boundary associated with the application of the CC-ALF; or

wherein the padding process corresponds to a one-side padding that is applied on one or more boundaries except at one or more ALF virtual boundaries associated with the application of the CC-ALF.

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

determine, for a conversion between a current video unit of a video comprising one or more samples and a bitstream of the video, a padding process used for padding unavailable samples during application of a cross-component adaptive loop filtering (CC-ALF) tool to at least some samples of the current video unit, wherein the current video unit corresponds to a current coding tree unit; and

perform the conversion based on the determination;

wherein the CC-ALF tool is applied to a first color component of the current video unit and includes correcting sample values of the first color component of the current video unit using sample values of a second color component of the current video unit;

wherein when a first unavailable sample is located in a below-right coding tree unit of the current video unit and a below coding tree unit of the current video unit and a right coding tree unit of the current video unit are both available, padding the first unavailable sample with its nearest neighboring sample located in the below coding tree unit;

wherein the below-right coding tree unit is located in a second slice that is different from a first slice in which the current video unit is located, the below coding tree unit and the right coding tree unit are both located in the first slice;

wherein when a second unavailable sample is located in an above-left coding tree unit of the current video unit and an above coding tree unit of the current video unit and a left coding tree unit of the current video unit are both available, padding the second unavailable sample with its nearest neighboring sample located in the above coding tree unit; and

the above-left coding tree unit is located in a third slice that is different from the first slice and the second slice, the above coding tree unit and the left coding tree unit are both located in the first slice.

10. The non-transitory computer-readable storage medium of claim 9, wherein the padding process corresponds to a mirrored padding that is applied on the unavailable samples at one or more ALF virtual boundaries associated with the usage of the CC-ALF tool; or

wherein the padding process corresponds to a one-side padding that is applied on the unavailable samples at one of: a slice, a tile, a picture, a sub-picture, or a 360-degree virtual boundary associated with the application of the CC-ALF; or

wherein the padding process corresponds to a one-side padding that is applied on one or more boundaries except at one or more ALF virtual boundaries associated with the application of the CC-ALF.

11. 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, for a current video unit of a video comprising one or more samples, a padding process used for padding unavailable samples during application of a cross-component adaptive loop filtering (CC-ALF) tool to at least some samples of the current video unit, wherein the current video unit corresponds to a current coding tree unit; and

generating the bitstream based on the determining;

wherein the CC-ALF tool is applied to a first color component of the current video unit and includes correcting sample values of the first color component of the current video unit using sample values of a second color component of the current video unit;

wherein when a first unavailable sample is located in a below-right coding tree unit of the current video unit and a below coding tree unit of the current video unit and a right coding tree unit of the current video unit are both available, padding the first unavailable sample with its nearest neighboring sample located in the below coding tree unit;

wherein the below-right coding tree unit is located in a second slice that is different from a first slice in which the current video unit is located, the below coding tree unit and the right coding tree unit are both located in the first slice;

wherein when a second unavailable sample is located in an above-left coding tree unit of the current video unit and an above coding tree unit of the current video unit and a left coding tree unit of the current video unit are both available, padding the second unavailable sample with its nearest neighboring sample located in the above coding tree unit; and

the above-left coding tree unit is located in a third slice that is different from the first slice and the second slice, the above coding tree unit and the left coding tree unit are both located in the first slice.

12. The non-transitory computer-readable recording medium of claim 11, wherein the padding process corresponds to a mirrored padding that is applied on the unavailable samples at one or more ALF virtual boundaries associated with the usage of the CC-ALF tool; or

wherein the padding process corresponds to a one-side padding that is applied on the unavailable samples at one of: a slice, a tile, a picture, a sub-picture, or a 360-degree virtual boundary associated with the application of the CC-ALF; or

wherein the padding process corresponds to a one-side padding that is applied on one or more boundaries except at one or more ALF virtual boundaries associated with the application of the CC-ALF.