

WHAT IS CLAIMED IS:

1. A method of coding video data, the method comprising:
determining a respective set of adaptive loop filters, from among a plurality of sets of adaptive loop filters, per block of a current picture for blocks in which adaptive loop filtering is used, wherein each respective set of adaptive loop filters includes a previous adaptive loop filter used in one or more previous pictures; and
adaptive loop filtering the blocks of the current picture in accordance with the respective sets of adaptive loop filters.
2. The method of claim 1, wherein determining the respective sets of adaptive loop filters comprises:
coding a respective syntax element indicating the respective set of adaptive loop filters, from among the plurality of sets of adaptive loop filters, per block of the current picture in which adaptive loop filter is used.
3. The method of claim 2, wherein the respective syntax element is an index to a list including the plurality of sets of adaptive loop filters.
4. The method of claim 1, further comprising:
coding a respective flag per block indicating if adaptive loop filtering is used for the respective block.
5. The method of claim 1, further comprising:
coding a respective flag per group of blocks indicating if adaptive loop filtering is used for each block in the respective group of blocks.

6. The method of claim 1, further comprising:
 - determining whether adaptive loop filtering is used for each block, or for each block in a group of blocks based on one or more of:
 - a number of blocks in a group of blocks having non-zero coded block flags (CBFs),
 - a number of non-zero transform coefficients,
 - a number of blocks in a group of blocks coded in a particular mode, and
 - a number of blocks in a group of blocks coded with skip mode.
7. The method of claim 1, wherein the blocks of the current picture are coding tree units (CTUs) of the current picture.
8. The method of claim 1, further comprising:
 - determining the plurality of sets of adaptive loop filters for the current picture.
9. The method of claim 1, wherein each respective set of adaptive loop filters further includes one or more of a current adaptive loop filter signaled for the current picture or a pre-trained adaptive loop filter.
10. The method of claim 9, further comprising:
 - adding adaptive loop filters to each respective set of adaptive loop filters so that any current adaptive loop filters signaled for the current picture are added first, any previous adaptive loop filters are added second, and any pre-trained adaptive loop filters are added last.
11. The method of claim 10, wherein the current adaptive loop filters signaled for the current picture and have a lower index value in a filter set list.
12. The method of claim 9, further comprising:
 - coding, for the current picture, one or more syntax elements indicating a current adaptive loop filter for the current picture.
13. The method of claim 1, wherein the respective sets of adaptive loop filters include respective adaptive loop filters assigned to each class of a plurality of classes.

14. The method of claim 1, wherein determining the respective set of adaptive loop filters comprises coding, for a first block of video data, a first syntax element indicating a first set of adaptive loop filters from among the plurality of sets of adaptive loop filters, and coding, for a second block of video data, a second syntax element indicating a second set of adaptive loop filters from among the plurality of sets of adaptive loop filters, wherein the second set of adaptive loop filters is different than the first set of adaptive loop filters, the method further comprising:

- coding the first block of video data in the current picture to create a first reconstructed block of video data;

- determining a first adaptive loop filter from the first set of adaptive loop filters for the first reconstructed block of video data;

- applying the first adaptive loop filter to the first reconstructed block of video data;

- coding the second block of video data in the current picture to create a second reconstructed block of video data;

- determining a second adaptive loop filter from the second set of adaptive loop filters for the second reconstructed block of video data; and

- applying the second adaptive loop filter to the second reconstructed block of video data.

15. The method of claim 1, wherein coding comprises encoding, the method further comprising:

- capturing the current picture with a camera.

16. The method of claim 1, wherein coding comprises decoding, the method further comprising:

- displaying the current picture.

17. An apparatus configured to code video data, the apparatus comprising:
a memory configured to store a current picture of video data; and
one or more processors in communication with the memory, the one or more processors configured to:
determine a respective set of adaptive loop filters, from among a plurality of sets of adaptive loop filters, per block of the current picture for blocks in which adaptive loop filtering is used, wherein each respective set of adaptive loop filters includes a previous adaptive loop filter used in one or more previous pictures; and
adaptive loop filter the blocks of the current picture in accordance with the respective sets of adaptive loop filters.
18. The apparatus of claim 17, wherein to determine the respective sets of adaptive loop filters, the one or more processors are further configured to:
code a respective syntax element indicating the respective set of adaptive loop filters, from among the plurality of sets of adaptive loop filters, per block of the current picture in which adaptive loop filter is used.
19. The apparatus of claim 18, wherein the respective syntax element is an index to a list including the plurality of sets of adaptive loop filters.
20. The apparatus of claim 17, wherein the one or more processors are further configured to:
code a respective flag per block indicating if adaptive loop filtering is used for the respective block.
21. The apparatus of claim 17, wherein the one or more processors are further configured to:
code a respective flag per group of blocks indicating if adaptive loop filtering is used for each block in the respective group of blocks.

22. The apparatus of claim 17, wherein the one or more processors are further configured to:
- determine whether adaptive loop filtering is used for each block, or for each block in a group of blocks based on one or more of:
 - a number of blocks in a group of blocks having non-zero coded block flags (CBFs),
 - a number of non-zero transform coefficients,
 - a number of blocks in a group of blocks coded in a particular mode, and
 - a number of blocks in a group of blocks coded with skip mode.
23. The apparatus of claim 17, wherein the blocks of the current picture are coding tree units (CTUs) of the current picture.
24. The apparatus of claim 17, wherein the one or more processors are further configured to:
- determine the plurality of sets of adaptive loop filters for the current picture.
25. The apparatus of claim 17, wherein each respective set of adaptive loop filters further includes one or more of a current adaptive loop filter signaled for the current picture or a pre-trained adaptive loop filter.
26. The apparatus of claim 25, wherein the one or more processors are further configured to:
- add adaptive loop filters to each respective set of adaptive loop filters so that any current adaptive loop filters signaled for the current picture are added first, any previous adaptive loop filters are added second, and any pre-trained adaptive loop filters are added last.
27. The apparatus of claim 26, wherein the current adaptive loop filters signaled for the current picture and have a lower index value in a filter set list.

28. The apparatus of claim 25, wherein the one or more processors are further configured to:
- code, for the current picture, one or more syntax elements indicating the current adaptive loop filter.
29. The apparatus of claim 17, wherein the respective sets of adaptive loop filters include respective adaptive loop filters assigned to each class of a plurality of classes.
30. The apparatus of claim 17, wherein to determine the respective set of adaptive loop filters, the one or more processors are further configured to code, for a first block of video data, a first syntax element indicating a first set of adaptive loop filters from among the plurality of sets of adaptive loop filters, and code, for a second block of video data, a second syntax element indicating a second set of adaptive loop filters from among the plurality of sets of adaptive loop filters, wherein the second set of adaptive loop filters is different than the first set of adaptive loop filters, and wherein the one or more processors are further configured to:
- code the first block of video data in the current picture to create a first reconstructed block of video data;
 - determine a first adaptive loop filter from the first set of adaptive loop filters for the first reconstructed block of video data;
 - apply the first adaptive loop filter to the first reconstructed block of video data;
 - code the second block of video data in the current picture to create a second reconstructed block of video data;
 - determine a second adaptive loop filter from the second set of adaptive loop filters for the second reconstructed block of video data; and
 - apply the second adaptive loop filter to the second reconstructed block of video data.
31. The apparatus of claim 17, wherein to code the one or more processors are configured to encode, the apparatus further comprising:
- a camera configured to capture the current picture.

32. The apparatus of claim 17, wherein to code the one or more processors are configured to decode, the apparatus further comprising:
a display configured to display the current picture.
33. An apparatus configured to code video data, the apparatus comprising:
means for determining a respective set of adaptive loop filters, from among a plurality of sets of adaptive loop filters, per block of a current picture for blocks in which adaptive loop filtering is used, wherein each respective set of adaptive loop filters includes a previous adaptive loop filter used in one or more previous pictures; and
means for adaptive loop filtering the blocks of the current picture in accordance with the respective sets of adaptive loop filters.
34. The apparatus of claim 33, wherein the means for determining the respective sets of adaptive loop filters comprises:
means for coding a respective flag per block indicating if adaptive loop filtering is used for the respective block; and
means for coding, based on the respective flag per block, a respective syntax element indicating the respective set of adaptive loop filters, from among the plurality of sets of adaptive loop filters, per block of the current picture.
35. The apparatus of claim 33, wherein each respective set of adaptive loop filters further includes one or more of a current adaptive loop filter signaled for the current picture or a pre-trained adaptive loop filter.
36. A non-transitory computer-readable storage medium storing instructions that, when executed, cause one or more processors to:
determine a respective set of adaptive loop filters, from among a plurality of sets of adaptive loop filters, per block of the current picture for blocks in which adaptive loop filtering is used, wherein each respective set of adaptive loop filters includes a previous adaptive loop filter used in one or more previous pictures; and
adaptive loop filter the blocks of the current picture in accordance with the respective sets of adaptive loop filters.

37. The non-transitory computer-readable storage medium of claim 36, wherein to determine the respective sets of adaptive loop filters, the instructions further cause the one or more processors to:

code a respective flag per block indicating if adaptive loop filtering is used for the respective block; and

code, based on the respective flag per block, a respective syntax element indicating the respective set of adaptive loop filters, from among the plurality of sets of adaptive loop filters, per block of the current picture.

38. The non-transitory computer-readable storage medium of claim 36, wherein each respective set of adaptive loop filters further includes one or more of a current adaptive loop filter signaled for the current picture or a pre-trained adaptive loop filter.