CLAIMS

1. A video encoding apparatus comprising:

an encoder configured to generate encoded video data by encoding an input video;

a decoder configured to decode video data to which a filter to compensate for a pixel value is to be applied, wherein the video data is from the encoded video data;

a deblocking filter unit configured to apply, to the decoded video data, a deblocking filter to remove a block effect;

an adaptive loop filter (ALF) parameter predictor configured to generate an ALF filter parameter by using information of the decoded video data, wherein the ALF filter parameter is configured to be applied to an ALF filter to compensate for a value of a current pixel by using a value of a neighboring pixel adjacent to the current pixel and a filter coefficient with respect to the neighboring pixel;

a sample adaptive offset (SAO) filter unit configured to apply a SAO filter to the decoded video data, wherein the SAO filter compensates for a value of a current pixel by using at least one of an edge offset and a band offset;

an ALF filter unit configured to apply, by using the ALF filter parameter, the ALF filter to video data to which the SAO filter has been applied; and

an entropy encoder configured to perform entropy encoding on the ALF filter parameter,

wherein the ALF parameter predictor comprises a first ALF parameter predictor and a second ALF parameter predictor,

wherein the first ALF parameter predictor is configured to generate the ALF filter parameter by using the information of the decoded video data to which the deblocking filter has not been applied,

wherein the second ALF parameter predictor is configured to generate the ALF filter parameter by using the information of the decoded video data to which the deblocking filter has been applied and the SAO filter has not been applied, and

wherein the video encoding apparatus selects one of the first ALF parameter predictor and the second ALF parameter predictor to generate the ALF filter parameter according to a preset method.

2. The video encoding apparatus of claim 1,

wherein the SAO filter unit is further configured to apply the SAO filter to decoded video data to which the deblocking filter has been applied.

3. The video encoding apparatus of claim 1,

wherein the second ALF parameter predictor is further configured to predict an ALF filter parameter of video data to which the SAO filter has been applied, by using information of the decoded video data to which the deblocking filter has been applied.

4. The video encoding apparatus of claim 1,

a SAO parameter predictor configured to generate a SAO filter parameter to be applied to a SAO filter to the decoded video data, by using the information of the decoded video data to which the deblocking filter has not been applied, and

wherein the SAO filter unit is further configured to apply the SAO filter to the decoded video data by using the SAO filter parameter.

5. The video encoding apparatus of claim 4, wherein

the second ALF parameter predictor is further configured to predict an ALF filter parameter of video data to which the SAO filter has been applied, by using information of the decoded video data to which the deblocking filter has been applied, and

the entropy encoder is further configured to perform entropy encoding on the SAO filter parameter.

6. The video encoding apparatus of claim 4, wherein the SAO parameter predictor is further configured to predict the SAO filter parameter by using intra mode information used in encoding the decoded video data.

7. The video encoding apparatus of claim 4, wherein the SAO parameter predictor is further configured to predict a SAO filter parameter of a current block by using a SAO filter parameter of a previous block to which a SAO filter has been applied before a SAO filter is applied to the current block in the decoded video data.

8. The video encoding apparatus of claim 4, wherein

the SAO parameter predictor is further configured to predict a SAO filter parameter of a current block by using information of a spatially-neighboring block located in a same picture as a picture of a reconstructed video in which the current block is located, and

the information of the spatially-neighboring block comprises at least one of a pixel value, intra mode information, and a SAO filter parameter of the spatially-neighboring block.

9. The video encoding apparatus of claim 4, wherein

the SAO parameter predictor is further configured to predict a SAO filter parameter of a current block by using information of a temporally-neighboring block located in a picture having different image sequence information from image sequence information of a picture of a reconstructed video in which the current block is located, and

the information of the temporally-neighboring block comprises at least one of a pixel value, intra mode information, and a SAO filter parameter of the temporally-neighboring block.

10. The video encoding apparatus of claim 4, wherein the SAO parameter predictor is further configured to predict a SAO filter parameter of a current block by using at least one of information of a spatially-neighboring block located in a same picture as a picture of a reconstructed video in which the current block is located and information of a temporally-neighboring block located in a picture having different time information from time information of a picture of the reconstructed video in which the current block is located, and information of the current block to which a deblocking filter has not been applied.

11. The video encoding apparatus of claim 1, wherein the entropy encoder is further configured to perform entropy encoding on the generated ALF filter parameter before the ALF filter unit applies, by using the generated ALF filter parameter, an ALF filter to a current block to which the SAO filter has been applied.

12. A video encoding method performed by a video encoding apparatus, the video encoding method comprising:

generating encoded video data by encoding an input video;

decoding video data to which a filter to compensate for a pixel value is to be applied, wherein the video data is from the encoded video data;

applying a deblocking filter to the decoded video data to remove a block effect;

generating an adaptive loop filter (ALF) filter parameter by using information of the decoded video data, wherein the ALF filter parameter is configured to be applied to an ALF filter to compensate for a value of a current pixel by using a value of a neighboring pixel adjacent to the current pixel and a filter coefficient with respect to the neighboring pixel;

applying a sample adaptive offset (SAO) filter to the decoded video data, wherein the SAO filter compensates for a value of a current pixel by using at least one of an edge offset and a band offset;

applying, by using the ALF filter parameter, the ALF filter to video data to which the SAO filter has been applied; and

performing entropy encoding on the ALF filter parameter,

wherein the generating of the ALF filter parameter comprises generating the ALF filter parameter by using one of the information of the decoded video data to which the deblocking filter has been applied and the SAO filter has not been applied, and the information of the decoded video data to which the deblocking filter has not applied, being selected by the video encoding apparatus according a preset method.

13. A non-transitory computer-readable recording medium having recorded thereon a computer program for executing the video encoding method of claim 12.

14. A computer program stored in a non-transitory computer-readable recording medium, the computer program being combined with hardware and thus executing a video encoding method comprising:

generating encoded video data by encoding an input video;

decoding video data to which a filter to compensate for a pixel value is to be applied, wherein the video data is from the encoded video data;

applying a deblocking filter to the decoded video data to remove a block effect;

generating an adaptive loop filter (ALF) filter parameter by using information of the decoded video data, wherein the ALF filter parameter is configured to be applied to an ALF filter to compensate for a value of a current pixel by using a value of a neighboring pixel adjacent to the current pixel and a filter coefficient with respect to the neighboring pixel;

applying a sample adaptive offset (SAO) filter to the decoded video data, wherein the SAO filter compensates for a value of a current pixel by using at least one of an edge offset and a band offset;

applying, by using the ALF filter parameter, the ALF filter to video data to which the SAO filter has been applied; and

performing entropy encoding on the ALF filter parameter,

wherein the generating of the ALF filter parameter comprises generating the ALF filter parameter by using one of the information of the decoded video data to which the deblocking filter has been applied and the SAO filter has not been applied, or the information of the decoded video data to which the deblocking filter has not applied, being selected according a preset method.