

CLAIMS

1. A method for video signal processing, performed by a decoder, comprising:

determining an intra prediction mode of a current block;

determining a reference sample used for an intra prediction of the current block;

determining a predetermined matrix based on the intra prediction mode, wherein the matrix is determined from a plurality of matrix groups by further consideration of a size and shape of the current block;

predicting the current block based on the reference sample and the matrix, wherein predicting the current block based on the reference sample and the matrix comprises:

generating a prediction block by applying the matrix to the reference sample, wherein the prediction block is generated at predetermined positions in the current block, and wherein the predetermined positions in the current block is determined based on a ratio of the size of the current block and a size of a sampling block; and

performing a transpose of prediction samples of the generated prediction block.

2. The method according to claim 1, wherein determining the reference sample comprises:

determining a neighboring region of the current block; and

performing down-sampling on the determined neighboring region, wherein the neighboring region is divided into a plurality of sample groups, the sample group comprises one or more samples, a representative value of the sample group is determined as the reference sample, and the representative value is one of the following: an average, a minimum, a maximum, a mode value and an intermediate value.

3. The method according to claim 1, wherein predicting the current block based on the reference sample and the matrix further comprises:

performing interpolation on the current block based on at least one of the following:
the prediction block or reconstructed samples adjacent to the current block.

4. The method according to claim 1, wherein the ratio is $1/2$, $1/4$, $1/8$, or $1/16$.

5. A method for video signal processing, performed by an encoder, comprising:

determining an intra prediction mode of a current block;

determining a reference sample used for an intra prediction of the current block;

determining a predetermined matrix based on the intra prediction mode, wherein the matrix is determined from a plurality of matrix groups by further consideration of a size and shape of the current block; and

predicting the current block based on the reference sample and the matrix, wherein predicting the current block based on the reference sample and the matrix comprises:

generating a prediction block by applying the matrix to the reference sample, wherein the prediction block is generated at predetermined positions in the current block, and wherein the predetermined positions in the current block is determined based on a ratio of the size of the current block and a size of a sampling block; and

performing a transpose of prediction samples of the generated prediction block.

6. The method according to claim 5, wherein determining the reference sample comprises:

determining a neighboring region of the current block; and

performing down-sampling on the determined neighboring region, wherein the neighboring region is divided into a plurality of sample groups, the sample group comprises one or more samples, a representative value of the sample group is determined as the reference sample, and the representative value is one of the following: an average, a minimum, a maximum, a mode value and an intermediate value.

7. The method according to claim 5, wherein predicting the current block based on the reference sample and the matrix further comprises:

performing interpolation on the current block based on at least one of the following: the prediction block or reconstructed samples adjacent to the current block.

8. The method according to claim 5, wherein the ratio is $1/2$, $1/4$, $1/8$, or $1/16$.

9. A decoder, comprising:

a processor; and

a memory, wherein the memory is configured to store computer programs capable of running in the processor, and when the computer programs are run by the processor, the processor is configured to:

determine an intra prediction mode of a current block;

determine a reference sample used for an intra prediction of the current block;

determine a predetermined matrix based on the intra prediction mode, wherein the matrix is determined from a plurality of matrix groups by further consideration of a size and shape of the current block;

generate a prediction block by applying the matrix to the reference sample, wherein the prediction block is generated at predetermined positions in the current block, and wherein

the predetermined positions in the current block is determined based on a ratio of the size of the current block and a size of a sampling block; and

perform a transpose of prediction samples of the generated prediction block.

10. The decoder according to claim 9, wherein the processor is further configured to:

determine a neighboring region of the current block; and

perform down-sampling on the determined neighboring region, wherein the neighboring region is divided into a plurality of sample groups, the sample group comprises one or more samples, a representative value of the sample group is determined as the reference sample, and the representative value is one of the following: an average, a minimum, a maximum, a mode value and an intermediate value.

11. The decoder according to claim 9, wherein the processor is further configured to:

perform interpolation on the current block based on at least one of the following: the prediction block or reconstructed samples adjacent to the current block.

12. The decoder according to claim 9, wherein the ratio is $1/2$, $1/4$, $1/8$, or $1/16$.

13. An encoder, comprising:

a processor; and

a memory, wherein the memory is configured to store computer programs capable of running in the processor, and when the computer programs are run by the processor, the processor is configured to:

determine an intra prediction mode of a current block;

determine a reference sample used for an intra prediction of the current block;

determine a predetermined matrix based on the intra prediction mode, wherein the matrix is determined from a plurality of matrix groups by further consideration of a size and shape of the current block;

generate a prediction block by applying the matrix to the reference sample, wherein the prediction block is generated at predetermined positions in the current block, and wherein the predetermined positions in the current block is determined based on a ratio of the size of the current block and a size of a sampling block; and

perform a transpose of prediction samples of the generated prediction block.

14. The encoder according to claim 13, wherein the processor is configured to:

determine a neighboring region of the current block; and

perform down-sampling on the determined neighboring region, wherein the neighboring region is divided into a plurality of sample groups, the sample group comprises one or more samples, a representative value of the sample group is determined as the reference sample, and the representative value is one of the following: an average, a minimum, a maximum, a mode value and an intermediate value.

15. The encoder according to claim 13, wherein the processor is configured to:

perform interpolation on the current block based on at least one of the following: the prediction block or reconstructed samples adjacent to the current block.

16. The encoder according to claim 13, wherein the ratio is $1/2$, $1/4$, $1/8$, or $1/16$.