

What is claimed is:

1. A picture encoding method, applicable to an encoder, the method comprising:

determining a size of a current block;

when encoding the current block by using a Matrix-based Intra Prediction (MIP) mode,

5 calculating a second offset based on the size of the current block, a first offset and reconstructed values of adjacent pixels corresponding to the current block; wherein the first offset is a constant, wherein the first offset is a parameter that needs to be subtracted from a weight matrix of the current block;

10 calculating a second prediction value of a pixel at a preset position in the current block by using the second offset, wherein the preset position is a particular position in the current block;

performing filtering on the second prediction value to obtain first prediction values of all pixels in the current block;

calculating residuals between original values and the first prediction values of the current block; and

15 encoding the residuals.

2. The method of claim 1, further comprising:

determining an MIP block size index corresponding to the current block according to the size of the current block; and

determining the first offset according to the MIP block size index.

20 3. The method of claim 2, wherein the determining the first offset according to the MIP block size index comprises:

determining the first offset corresponding to the MIP block size index according to a correspondence relation between pre-stored indexes and offsets.

25 4. The method of claim 1, wherein the second offset is used for controlling an offset of a result of bit-shift operation in a process of calculating the second prediction value.

5. A picture decoding method, applicable to a decoder, the method comprising:

decoding a bitstream to obtain a size, a coding mode, and residuals of a current block;

when the coding mode of the current block is a Matrix-based Intra Prediction (MIP) mode, calculating a second offset based on the size of the current block, a first offset and reconstructed values of adjacent pixels corresponding to the current block; wherein the first offset is a constant; wherein the first offset is a parameter that needs to be subtracted from a weight matrix
5 of the current block;

calculating a second prediction value of a pixel at a preset position in the current block by using the second offset, wherein the preset position is a particular position in the current block;

performing filtering on the second prediction value to obtain first prediction values of all pixels in the current block; and

10 calculating sum values of the first prediction values and the residuals, and setting the sum values as reconstructed values of the current block.

6. The method of claim 5, further comprising:

determining an MIP block size index corresponding to the current block according to the
15 size of the current block; and

determining the first offset according to the MIP block size index.

7. The method of claim 6, wherein the determining the first offset according to the MIP block size index comprises:

determining the first offset corresponding to the MIP block size index according to a
20 correspondence relation between pre-stored indexes and offsets.

8. The method of claim 5, wherein

the second offset is used for controlling an offset of a result of bit-shift operation in a process of calculating the second prediction value.

9. An encoder, comprising: a first determining part, a first calculating part and an
25 encoding part,

wherein the first determining part is configured to determine a size of a current block;

the first calculating part is configured to, when the current block is encoded by using a

Matrix-based Intra Prediction (MIP) mode, calculate a second offset based on the size of the current block, a first offset and reconstructed values of adjacent pixels corresponding to the current block; wherein the first offset is a constant; wherein the first offset is a parameter that needs to be subtracted from a weight matrix of the current block;

5 the first determining part is further configured to calculate a second prediction value of a pixel at a preset position in the current block by using the second offset, wherein the preset position is a particular position in the current block, and perform filtering on the second prediction value to obtain first prediction values of all pixels in the current block; and

10 the encoding part is configured to calculate residuals between original values and the first prediction values of the current block, and encode the residuals.

10. The encoder of claim 9, wherein the first determining part is further configured to determine an MIP block size index corresponding to the current block according to the size of the current block; and determine the first offset according to the MIP block size index.

15 11. The encoder of claim 10, wherein the first determining part is configured to determine the first offset corresponding to the MIP block size index according to a correspondence relation between pre-stored indexes and offsets.

12. The encoder of claim 9, wherein the second offset is used for controlling an offset of a result of bit-shift operation in a process of calculating the second prediction value.

20 13. A decoder, comprising: a parsing part, a second determining part and a second calculating part,

wherein the parsing part is configured to decode a bitstream to obtain a size, a coding mode, and residuals of a current block;

25 the second calculating part is configured to, when the coding mode of the current block is a Matrix-based Intra Prediction (MIP) mode, calculate a second offset based on the size of the current block, a first offset and reconstructed values of adjacent pixels corresponding to the current block; wherein the first offset is a constant; wherein the first offset is a parameter that needs to be subtracted from a weight matrix of the current block; and

the second determining part is configured to calculate a second prediction value of a pixel

at a preset position in the current block by using the second offset, wherein the preset position is a particular position in the current block, perform filtering on the second prediction value to obtain first prediction values of all pixels in the current block, and calculate sum values of the first prediction values and the residuals, and set the sum values as reconstructed values of the current block.

14. The decoder of claim 13, wherein the second determining part is further configured to determine an MIP block size index corresponding to the current block according to the size of the current block; and determine the first offset according to the MIP block size index.

15. The decoder of claim 14, wherein the second determining part is configured to determine the first offset corresponding to the MIP block size index according to a correspondence relation between pre-stored indexes and offsets.

16. The decoder of claim 13, wherein the second offset is used for controlling an offset of a result of bit-shift operation in a process of calculating the second prediction value.

17. A non-transitory computer-readable storage medium, having a computer program and a bitstream stored thereon, wherein the computer program, when executed by a processor, enables the processor to perform the steps of the picture encoding method of claim 1 to generate the bitstream.