CLAIMS

1. An image decoding device comprising:

an intra prediction unit for, when a coding mode for a coding block is an intra coding mode, carrying out an intra-frame prediction process on each of processing blocks to generate a prediction image, each of the processing blocks being the coding block or a sub-block obtained by dividing the coding block,

wherein, when an intra prediction parameter indicates a vertical prediction process and a size of the processing block is less than a predetermined size,

the intra prediction unit adds a value to a signal value of a pixel adjacent to top of the processing block and outputs a result of the addition as a prediction value of the prediction image, the value being proportional to an amount of change in a vertical direction of signal values of pixels adjacent to the left of the processing block, and

when the intra prediction parameter indicates the vertical prediction process and the size of the processing block is greater than or equal to the predetermined size,

the intra prediction unit outputs the signal value of the pixel adjacent to top of the processing block as the prediction value of the prediction image.

2. An image encoding device comprising:

an intra prediction unit for, when a coding mode for a coding block is an intra coding mode, carrying out an intra-frame prediction process on each of processing blocks to generate a prediction image, each of the processing blocks being the coding block or a sub-block obtained by dividing the coding block,

wherein, when an intra prediction parameter indicates a vertical prediction process and a size of the processing block is less than a predetermined size,

the intra prediction unit adds a value to a signal value of a pixel adjacent to top of the processing block and outputs a result of the addition as a prediction value of the prediction image, the value being proportional to an amount of change in a vertical direction of signal values of pixels adjacent to the left of the processing block, and

when the intra prediction parameter indicates the vertical prediction process and the size of the processing block is greater than or equal to the predetermined size,

the intra prediction unit outputs the signal value of the pixel adjacent to top of the processing block as the prediction value of the prediction image.

3. An image decoding method comprising:

an intra prediction step of, when a coding mode for a coding block is an intra

coding mode, carrying out an intra-frame prediction process on each of processing blocks to generate a prediction image, each of the processing blocks being the coding block or a sub-block obtained by dividing the coding block,

wherein, when an intra prediction parameter indicates a vertical prediction process and a size of the processing block is less than a predetermined size,

the intra prediction step adds a value to a signal value of a pixel adjacent to top of the processing block and outputs a result of the addition as a prediction value of the prediction image, the value being proportional to an amount of change in a vertical direction of signal values of pixels adjacent to the left of the processing block, and

when the intra prediction parameter indicates the vertical prediction process and the size of the processing block is greater than or equal to the predetermined size,

the intra prediction step outputs the signal value of the pixel adjacent to top of the processing block as the prediction value of the prediction image.

4. An image encoding method comprising:

an intra prediction step of, when a coding mode for a coding block is an intra coding mode, carrying out an intra-frame prediction process on each of processing blocks to generate a prediction image, each of the processing blocks being the coding block or a sub-block obtained by dividing the coding block,

wherein, when an intra prediction parameter indicates a vertical prediction process and a size of the processing block is less than a predetermined size,

the intra prediction step adds a value to a signal value of a pixel adjacent to top of the processing block and outputs a result of the addition as a prediction value of the prediction image, the value being proportional to an amount of change in a vertical direction of signal values of pixels adjacent to the left of the processing block, and

when the intra prediction parameter indicates the vertical prediction process and the size of the processing block is greater than or equal to the predetermined size,

the intra prediction step outputs the signal value of the pixel adjacent to top of the processing block as the prediction value of the prediction image.

5. A data structure of encoded data encoded by an image encoding device carrying out a prediction process on each of processing blocks to generate a prediction image, each of the processing blocks being a coding block or a sub-block obtained by dividing the coding block,

wherein the encoded data comprises

a coding mode for the coding block,

an intra prediction parameter indicating an intra prediction mode used for carrying

out an intra-frame prediction process on each of the processing blocks when the coding mode is an intra coding mode,

information defining a block size of each of the processing blocks, and

compressed data generated by carrying out a compression process on a difference between an image of each of the processing blocks and each of the prediction images,

wherein, when the coding mode is an intra coding mode and the intra prediction parameter indicates a vertical prediction process, the prediction image is generated by the image encoding device,

wherein, when the block size is less than a predetermined size, the image encoding device adds a value to a signal value of a pixel adjacent to top of the processing block and outputs a result of the addition as the prediction value, the value being proportional to an amount of change in a vertical direction of signal values of pixels adjacent to the left of the processing block, and

when the block size is greater than or equal to the predetermined size, the image encoding device outputs the signal value of the pixel adjacent to top of the processing block as the prediction value of the prediction image.