[CLAIMS]

1. A method of decoding video data in uni-directional prediction, the method comprising:

deriving motion information of a current prediction unit;

generating a prediction block of the current prediction unit using the motion information;

generating a transform block by inversely quantizing a quantization block using a quantization parameter, wherein the quantization block is generated by inversely scanning quantization coefficient components;

generating a residual block by inversely transforming the transform block;

generating a reconstructed picture using the residual block and the prediction block; and

applying a filter to the reconstructed picture,

wherein the motion information includes a reference picture index and a motion vector,

wherein a prediction pixel of the prediction block is generated using 7-tap interpolation filter when the motion vector indicates quarter pixel position, and a prediction pixel of the prediction block is generated using 8-tap interpolation filter when the motion vector indicates half pixel position,

wherein the quantization parameter is generated using a differential quantization parameter and a quantization parameter predictor per quantization unit including at least one coding unit,

wherein if only one of a left quantization parameter and an above quantization parameter is available, an average of a previous quantization parameter and the available one of the left and the above quantization parameters is set as the quantization parameter predictor.

2. The method of claim 1, wherein size of the quantization unit is one of allowable sizes of a coding unit.

3. The method of claim 1, wherein the differential quantization parameter is derived per the quantization unit.

4. The method of claim 1, wherein size of the quantization unit is determined per picture.

5. The method of claim 1, wherein the reference picture index and the motion vector of the current prediction unit are a reference picture index and a motion vector for a merge candidate specified by a merge index on a merge candidate list including a temporal merge candidate and spatial merge candidates.

6. The method of claim 5, wherein a motion vector of the temporal merge candidate is a motion vector of a temporal merge candidate block within a temporal merge candidate picture, and a position of the temporal merge candidate block is determined based on a position of the current prediction unit within a largest coding unit.

7. The method of claim 5, wherein motion vectors of the spatial merge candidates are motion vectors of spatial merge candidate blocks, and the spatial merge candidate blocks are a left block, an above block, an above-right block, a left-below block, and an above-left block of the current prediction unit.

8. The method of claim 7, wherein the above-left block is set as a spatial merge candidate block when motion information for at least one of the left block, the above block, the above-right block and the left-below block is not available.

9. The method of claim 1, wherein an average of a left quantization parameter and an above quantization parameter is set as the quantization parameter predictor when the both of the left and the above quantization parameters are available.

10. The method of claim 1, wherein if both of the left quantization parameter and the above quantization parameter are not available, the previous quantization parameter is set as the quantization parameter predictor.