[CLAIMS]

1. An apparatus for decoding video data using uni-directional prediction, the apparatus comprising:

inter prediction unit for deriving a reference picture index and a motion vector for a current prediction unit and generating a prediction block for the current prediction unit using the reference picture index and the motion vector;

inverse scanning unit for generating a quantization block by inversely scanning quantization coefficient components;

inverse quantization unit for generating a transform block by inversely quantizing the quantization block using a quantization parameter;

inverse transform unit for generating a residual block by inversely transform the transform block; and

an adder for generating a reconstructed block using the prediction block and the residual block,

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

wherein the quantization parameter is derived using a differential quantization parameter and a quantization parameter predictor,

wherein the inverse quantization unit sets the quantization parameter predictor as an average of a left quantization parameter and an above quantization parameter when the both of the left and the above quantization parameters are available,

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

wherein if both of the left quantization parameter and the above quantization parameter are not available, the inverse quantization unit set the previous quantization parameter as the quantization parameter predictor.

2. The apparatus of claim 1, wherein the inverse quantization unit generates the quantization parameter per quantization unit including at least one coding unit, and determines size of the quantization unit as one of allowable sizes of a coding unit.

3. The apparatus of claim 1, wherein the quantization parameter predictor is generated per the quantization unit.

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

5. The apparatus 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 apparatus 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 the inter prediction unit determines a position of the temporal merge candidate block based on a position of the current prediction unit within a largest coding unit.

7. The apparatus 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 apparatus of claim 7, wherein the inter prediction unit sets the above-left block 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.