

WHAT IS CLAIMED IS:

1. A decoder configured to:

receive a bit stream including a coded picture, the coded picture including a block of coded pixels and signaling information including a first partition index useful for determining the start point of a non-straight non-rectangular partition and a second partition index useful for determining the end point of the non-straight non-rectangular partition;

determine, using the first partition index, a start point of a non-straight non-rectangular partition in the block, the start point being located on a first side of the block a first offset distance from a first corner of the block;

determine, using the second partition index, an endpoint of the non-straight non-rectangular partition in the block, the end point being located on a second side of the block, a second offset distance from a second corner of the block;

generate first predictive pixel values in a first region on a first side of the non- straight, non-rectangular partition;

generate second predictive pixel values in a second region on a second side of the non-straight, non-rectangular partition; and

decode the block using the predictive pixel values.

2. The decoder of claim 1, wherein a first motion vector chosen from a first set of motion vector candidates is used to generate the first region of predictive pixel values and a second motion vector chosen from a second set of motion vector candidates is used to generate the second region of predictive pixel values.

3. The decoder of claim 1, wherein:

the decoder smooths the first predictive pixel values and second predictive pixel values across the non-straight, non-rectangular partition; and

decodes the coded block by adding residual pixel values to the smoothed first and second predictive pixel values.

4. The decoder of claim 1, wherein the block is a coding tree unit.

5. The decoder of claim 1, wherein the block is $N \times N$ and N is one of 128, 64, or 32.
6. The decoder of claim 1, wherein the non-straight non-rectangular partition is a curve.

5 7. A decoder configured to:

receive a bit stream including a coded picture, the coded picture including a coding tree unit comprising multiple coding units and signaling information including a first partition index useful for determining the start point of a non-straight non-rectangular partition in the coding tree unit and a second partition index useful for determining the end point of the non-straight non-rectangular partition in the coding tree unit;

determine, using the first partition index and second partition index, the start point and end point of the non-straight, non-rectangular partition in the coding tree unit;

generate first predictive pixel values in a first region on a first side of the non-straight, non-rectangular partition using a first motion vector from a first set of motion vector candidates;

generate second predictive pixel values in a second region on a second side of the non-straight, non-rectangular partition using a second motion vector from a second set of motion vector candidates;

smooth the first predictive pixel values and second predictive pixel values across the non-straight, non-rectangular partition; and

decode the coding tree unit by adding residual pixel values to the smoothed first and second predictive pixel values.

8. The decoder of claim 7, wherein:

the bit stream includes a first motion vector candidate index used to identify the first motion vector from the first set of motion vector candidates; and

wherein the bitstream includes a second motion vector candidate index used to identify the second motion vector from the second set of motion vector candidates.