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(54) Title: LEARNING-BASED POINT CLOUD COMPRESSION VIA TEARING TRANSFORM

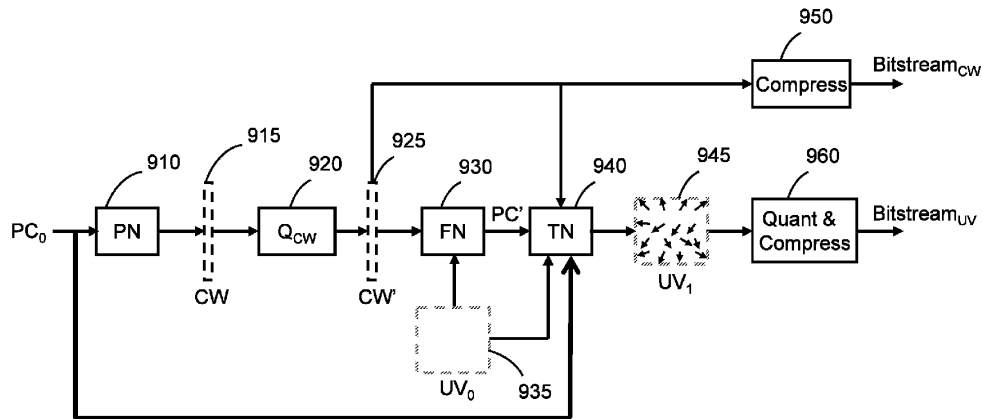


FIG. 9

(57) Abstract: In one implementation, a learnable transformation TearingTransform over 3D point cloud data is proposed. The TearingTransform could decompose point clouds into two channels: a low rank channel and a sparse channel. The low rank channel corresponds to a codeword representing a rough shape of a point cloud. The sparse channel appears as an image-like data representing residual information that can refine the reconstructed point locations. In an encoder based on TearingTransform, a PN module is used to generate the codeword from the input point cloud; a FN module is used to reconstruct a preliminary point cloud from the codeword and an initial grid image; and a TN module modifies the initial grid image to generate an adjusted grid image. The codeword and the adjusted grid image are compressed. At the decoder, the point cloud can be reconstructed based on the decompressed codeword and adjusted grid image.

[Continued on next page]

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