**LOW-COST HIGH-PERFORMANCE VLSI ARCHITECTURE FOR MONTGOMERY MODULAR MULTIPLICATION**

**Abstract:**

The paper presents a VLSI architecture of three-dimensional discrete cosine transform (3D DCT) for video recent compression. By making use of the separability property of DCT, the 3D DCT is decomposed into 1D DCTs computed in each of the three dimensions. Each 1D DCT is carried out as an integer DCT using the butterfly structure. It is useful for reducing the computation time and also makes our structure fully modular. Finally, we have achieved compression by element multiplication of 3D DCT output with quantization matrix and then zigzag coding of the resultant output. The proposed method is implemented in Xilinx 14.7 software using Verilog and the results are verified by its MATLAB implementation. The result computes the mean square error and similarity factor for the original frames and reconstructed frames from the standard videos. The results show the comparable performance of proposed 3D DCT and helps in efficient implementation of video coding standard.

**Keywords—**quantization; redundancy; separable property ; similarity factor; transformation;

**TOOLS:**

1. **XilinxISE 14.7**

**LANGUAGE:**

1. **VerilogHDL**