

A new lossless method of Huffman coding for text data compression and decompression process with FPGA implementation

ABSTRACT

Digital compression for reducing data size is important because of bandwidth restriction. Compression technique is also named source coding. It defines the process of compressed data using less number of bits than uncompressed form. Compression is the technique for decreasing the amount of information used to represent data without decreasing the quality of the text. It also decreases the number of bits needed to storage or transmission in different media. Compression is a method that makes keeping of data easier for a large size of information. In this study, proposed Huffman design includes encoder and decoder based on new binary tree for improving usage of memory for text compression. A saving percentage of approximately 4°.95% was achieved through the suggested way. In this research, Huffman encoder and decoder were created using Verilog HDL. Huffman design was achieved by using a binary tree. Model Sim simulator tool from Mentor Graphics was used for functional verification and simulation of the design modules. FPGA was used for Huffman implementation.

Keyword: Binary tree; Data compression; Decoding algorithm. Huffman Decoder; Verilog; FPGA