

ABSTRACT

Internet of things (IoT) nowadays uses a generic microprocessor, which is applicable for general purpose and uses many machine instructions, thus it is causing a high power. Likewise, IoT can also be integrated on ASIC (Application-specific integrated circuit) which is customized for partial use. ASIC is hardcoded, meaning that the program cannot be modified, therefore it tends to consume less power compared to generic microprocessor. This thesis considers a compression for an image of CCTV, which is using a microprocessor that is designed for application specific as the compression.

Compressing image is required to reduce the size of the original image. This thesis uses the Deluxe (DLX) microprocessor with a high performance to design an image compressor, and the machine instructions were determined with a specific algorithm. The compression uses Joint Photographic Experts Group (JPEG) format lossy compression, which is the most commonly used to compress multimedia data.

The proposed compression method is Huffman Coding, coded in the assembly DLX programming language. DCT and Quantization are needed to be simulated in Matlab to do the Huffman coding process. Then, the result data can be processed into Huffman.

The result of this stage is by using Huffman Coding in the DLX microprocessor, it requires total of 11657 cycles executed by 8622 instructions. Thus, with such specific machine instructions, the performance of DLX microprocessor to execute Huffman Coding can be efficient.

Keywords: *IoT, DLX microprocessor, Huffman Coding, image compression, JPEG.*