COMPRESSOR

We have yet to decide on our exact idea. We will be conducting research on the following topics and will decide on one, or multiple.

Topics:

- Text Compressor
- Audio Compressor
- File Compressor (Zipper)
- Image Compressor
- Graph Compressor
- Text Pattern Recognition

Text Compressor

Can be compressed in 3 ways:

1) Symbol Wise
2) Dictionary Based
3) Transform Based

Different Text Compression Techniques:

Lempel-Zil-Welch (LZW) technique.

Huffman Coding.

Hashing.

Huffman coding is a lossless data compression algorithm. In this algorithm, a variable-length code is assigned to input different

characters. The code length is related to how frequently characters are used. Most frequent characters have the smallest codes and longer codes for least frequent characters

Hashing algorithms have two uses - they can provide a quick way to generate memory addresses for storing records in databases, and also used to store and check passwords. Hashing algorithms are one-way functions so it is very easy to convert a plain-text value into a hash but very difficult to convert a hash back to plain-text. This makes it useful for storing passwords, but not encrypting data.

File Compressor/Zipper

1) Lempel–Ziv (LZ) Compression Technique
2) Huffman Coding

Image Compressor

1) JPEG image compression algorithm:

The algorithm can be neatly broken up into several stages: There is an input image I, which goes through the following process: 1) A color transform, 2) A 2D discrete cosine transform on 8x8 blocks, 3) A quantization (filtering) stage, 4) Huffman encoding.

Other Topics we would like to explore include:

Pattern recognition

Cryptography

Encryption/Decryption