**Image encoding and Compression: -**

- **Input**: image gray level 28\*28.

- **output**: compressed binary text file.

- the image is gray level (0-255) so we needed 8 bits to define the color of the pixel.

- as the data bus is 16 bits, we used the other 8 bits to know how many pixels are similar next to each other.

- we begin calculating the pixels from top left row to top right row then calculate again second top left row to second top right row and so on.

- the compression is done on the byte level.

- the output file each row in it contains 16 bits 0’s and 1’s rows.

**CNN Json encoding: -**

- **Input**: CNN json file.

- **Output**: two files : biString = each row contains 16 bit and each row represents value for each object in the json file.

: idString = identify the meaning of each row in the output biString.

- we take from json file.

1) convolution layer (sx, in\_depth, out\_depth, out\_sx, l1\_decay\_mul, l2\_decay\_mul, pad, layer name, biases {depth, weight ‘w’}, filters weights).

2) pooling layer (sx, in\_depth, out\_depth, out\_sx,in\_sx ”convlayer out\_sx”, pad, layer name).

3) fully connected layer (num\_inputs, biases{weight ‘w’}, filters weights).

- we add also (num of layers, filters count for convolution layer,in\_sx in pool layer which represents out\_sx from convolution layer).