10 Future Scope

Here, we give the scope and directions for further research related to our work area.

- We have found arithmetic decoding to be very slow. In our view, it is due to the time taken to determine the cumulative frequency interval where target encoded code value falls. We have used binary search as the cumulative frequencies are in sorted order. Another idea could be to use associate arrays. Still, one may think of better solution to reduce the decompression time.

- Using parallel processing:
  - Parallel implementation of arithmetic coding is not worthwhile due to the need of storing data model with compressed data. But, with adaptive arithmetic coding, this overhead is not there. The only overhead is of adapting a statistical data model on fly which takes more time. This time can be reduced by processing blocks of data in parallel. This should have additional benefit in compression rate also due to locality of reference property. Assuming higher redundancy of data in a block, the probability distribution may be observed as more skewed distribution would result in better compression.
  
  - With block-wise data transformation methods QBT-Z and BPT-Z, processing of each block is an independent task. Thus these methods are also a good candidate for parallel computing.