ELEN-0060: Information and Coding Theory

Project 2 - Source coding, data compression and channel coding

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Academic year 2021 - 2022

1 Source coding and reversible data compression

1.1 Question 5

First, we can compute the marginal probability distribution of all the symbols based on the given Morse text. The distribution is:

Symbol	.	-	_	/
Probability	0.43378	0.28706	0.21452	0.06464

Table 1: Marginal probability distribution of all the symbols

Based on the distribution of probabilities, we can compute the binary Huffman code. We get the following code:

Symbol	.	-	_	/
Huffman code	0	11	101	100

Table 2: Binary Huffman code

By applying the obtained Huffman code to the Morse text, we get the encoded Morse text whose size is 2213141 bits. The original Morse text has a size of 4797160 bits. Thus, we have a compression rate of 2.16758.