**Optimised Cost Considering Huffman Code for Biological Data Compression**

In this paper, we propose a new approach to improve compression performance of a cost considering version of the Huffman code. The proposed approach aims at reducing total number of bits required by the cost considering Huffman code to encode a message by applying a genetic algorithm. The algorithm works by giving penalty on the cost to reduce number of bits, but also ensures that the overall cost is lower than the cost incurs by the classical Huffman code. We used some standard biological datasets as input to evaluate the performance of the proposed approach. The experiments confirm that the proposed approach improves the compression performance of the cost considering version of the classical Huffman code. The new approach obtains a compression ratio of 40*.*97% in the best case, 24*.*51% in the worst case, and 28 *.*53% in the average case.