Abstract

Motif detecting in DNA sequences is one of the most popular tasks in computational biology, which is important for people to understand functions of genes. Recently, the motif detecting problem was abstracted as a planted (l,d)-motif problem and many instances of the problem have been proposed as challenges for motif detecting algorithms. In this work, we propose an improved immune genetic algorithm, called MRPIGA, to solve a class of specific planted (l,d)-motif problems, weak signal motif problems, in which a modified random projection strategy is applied to generate a good initial population of candidate solutions. Experimental results on stimulated data show that MRPIGA performs better than Random Projection, GARPS and MDGA. We also test the MRPIGA on five groups of realistic biological data. It shows that the MRPIGA performs superior to detect motifs.

References

An Improved Immune Genetic Algorithm for Weak Signal Motif Detecting Problems


Index Terms

Computer Science Pattern Recognition
Keywords
Motif Detecting  Weak Signal Motif  Random Projection  Immune Genetic Algorithm