Abstract

The RNA structural alignment is one of the most challenging tasks in bioinformatics. However, finding the accurate conserved structure of a set of RNA sequences is still being a difficult task. In this work, the problem is cast as an optimization problem for which a new framework relaying on hybrid genetic algorithm is proposed. The contribution consists in using a new objective
A Hybrid Genetic Algorithm for RNA Structural Alignment

function based on the Structure Conservation Index (SCI). In order to enhance the Genetic Algorithms (GA) performances, a Simulated Annealing (SA) procedure has been used. The proposed algorithm is composed on two phases. The first phase consists of applying a genetic algorithm. In the second phase, the simulated annealing procedure is applied in order to improve the final population given by the genetic algorithm. Experiments on a wide range of data sets have shown the effectiveness of the proposed framework and its ability to achieve good quality solutions comparing to those given by others techniques.

Reference

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Index Terms

Computer Science

Algorithms

Key words

RNA Structure Prediction

Genetic Algorithm

Simulated Annealing

Structure Conservation Index