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**Analysis of evolutionary algorithms for the longest common subsequence problem.** (English)

Zbl 1184.68604

Algorithmica 57, No. 1, 170-186 (2010).

Summary: In the longest common subsequence problem, the task is to find the longest sequence of letters that can be found as a subsequence in all members of a given finite set of sequences. The problem is one of the fundamental problems in computer science with the task of finding a given pattern in a text as an important special case. It has applications in bioinformatics; problem-specific algorithms and facts about its complexity are known. Motivated by reports about good performance of evolutionary algorithms for some instances of this problem a theoretical analysis of a generic evolutionary algorithm is performed. The general algorithmic framework encompasses EAs as different as steady state GAs with uniform crossover and randomized hill-climbers. For all these algorithms, it is proved that even rather simple special cases of the longest common subsequence problem can neither be solved to optimality nor approximately be solved up to an approximation factor arbitrarily close to 2.

**MSC:**

68W05 Nonnumerical algorithms

68T05 Learning and adaptive systems in artificial intelligence

**Keywords:**

Evolutionary algorithms; Longest common subsequence problem; Run time analysis; Crossover

**Full Text:** DOI

**References:**

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