

Implementing in Prolog an effective cellular solution for the Knapsack problem

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Abstract. In this paper we present an implementation in Prolog of an effective solution to the Knapsack Problem using a family of deterministic P systems with active membranes using 2-division.

1 Introduction

The aim of this work is to present an effective solution to the Knapsack problem through a simulator in Prolog implementing deterministic P systems with active membranes using 2-division.

The different variants of P systems found in the literature are generally thought as generating devices, and many of them have been proved to be computationally complete. Nevertheless, it is not usual to find in these variants effective solutions to hard numerical problems.

The model we study here, P systems with active membranes, works with symbol-objects, and it provides rules of division for membranes. In particular, *P systems with active membranes* are studied in [3], section 7.2.

The paper is organized as follows: Section 2 briefly presents a solution to the decision Knapsack problem using a family of deterministic P systems with active membranes in linear time; Section 3 shows some ideas about the simulator developed in Prolog used to implement this solution; a standard work session with the interface provided with the simulator is presented in Section 4; and, finally, in Section 5 some conclusions and future work about the subject of this paper are presented.

References

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