

Problem #71

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Summary: Design pattern-matching algorithms for graphs.

There are good algorithms for pattern-matching for words and trees, but not yet for graphs.

Remark

An algorithm for finding the rules of a graph grammar that are applicable to a graph has been given in [BGT91].

Comment sent by Bruno Courcelle

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Many types of graph embeddings exist. Thus pattern-matching is not uniquely defined. However, the difficulty of graph isomorphism indicates there cannot exist general algorithms. There may exist in particular cases (bounded degree, for other constraints).

Bibliography

- [BGT91] Horst Bunke, T. Glauser, and T.-H. Tran. An efficient implementation of graph grammars based on the RETE-matching algorithm. In H. Ehrig, H.-J. Kreowski, and G. Rozenberg, editors, *Graph Grammars and Their Application to Computer Science*, volume 532 of *Lecture Notes in Computer Science*, pages 174–189, 1991.