Context-Free Path Queries, Planar Graphs and Friends

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ABSTRACT

Abstract is very abstract.

CCS CONCEPTS

• **Computer systems organization** → **Embedded systems**; *Redundancy*; Robotics; • **Networks** → Network reliability.

KEYWORDS

datasets, neural networks, gaze detection, text tagging

1 INTRODUCTION

Context-Free Path Querying (CFPQ) is a sublcass of Language-constrained path problem, where language is set to be Context-Free.

Importance of CFPQ. Application areas. RDF, Graph database querying, Graph Segmentation in Data provenance, Biological data analysis, static code analysis.

1.1 An Example

Example of graph and query. Should be used in explataion below.

1.2 Existing CFPQ Algorithms

Number of problem-specific solutions in static code analysis.

Hellings, Ciro et al, Kujpers, Sevon, Verbitskaya, Azimov, Ragozina

1.3 Existing Theoretical Results

Existing theoretical results
Linear input. Valiant [?], Lee [?].
Yannacacis [?]? Reps?

Bradford [?]
RSM [?].
C alias analysis [?]
Chatterjee [?]
For trees
Truly-subcubic for Language Editing Distance [?].
Truly-subcubic algorithm is stil an open problem.

1.4 Our Contribution

This paper is organized as follows. !!!!!

2 PRELIMINARIES

We introduce !!!!

2.1 Context-Free Path Querying

Graph, grammar, etc.

Let $i\pi j$ denote a unique path between nodes i and j of the graph and $l(\pi)$ denotes a unique string which is obtained from the concatenation of edge labels along the path π. For a context-free grammar $G = (\Sigma, N, P, S)$ and directed labelled graph $D = (Q, \Sigma, \delta)$, a triple (A, i, j) is *realizable* iff there is a path $i\pi j$ such that nonterminal $A \in N$ derives $l(\pi)$.

2.2 Tensor-Based algortihm for CFPQ

Algorithm 1 Kronecker product context-free recognizer for graphs

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1: **function** CONTEXTFREEPATHQUERYING(D, G)

2.3 Planar Graphs

A planar graph is a graph that can be embedded in the plane...

3 CFPQ ON PLANAR DIGRAPHS

... ...

4 CONCLUSION

Conclusion and future work.
Efficient implementation?
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