Parser-Combinators for Contex-Free Path Querying*

Smolina
Institute for Clarity in Documentation
Dublin, Ohio
trovato@corporation.com

Ekaterina Verbitskaia
Institute for Clarity in Documentation
Dublin, Ohio
webmaster@marysville-ohio.com

Ilia Kirillov
The Thørväld Group
Hekla, Iceland
larst@affiliation.org

Semyon Grigorev
Institute for Clarity in Documentation
Dublin, Ohio
trovato@corporation.com

ABSTRACT

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CCS CONCEPTS

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

KEYWORDS

ACM proceedings, LaTeX, text tagging

ACM Reference Format:
Smolina, Ekaterina Verbitskaia, Ilia Kirillov, and Semyon Grigorev. 2018. Parser-Combinators for Contex-Free Path Querying. In *Proceedings of ACM Woodstock conference (GRADES-DNA'18).* ACM, New York, NY, USA, Article 4, 2 pages. https://doi.org/10.475/123_4

1 INTRODUCTION

Graph data bases

Path querying and context-free path querying. Same generation query is not a regular.

Integration with general purpose programming languages. Special DSL vs Combinators (LINQ, etc) [6]

Contribution:

- Combinators for CF path querying with structural representation of result
- Implementation in Scala. Generalization of linear parsing. Integration with Neo4J graph data base. Available on gitHub:https://github.com/YaccConstructor/Meerkat
- Evaluation on realistic data, which shows that it is applicable. Comparison with other tools for CF path querying.

2 RELATED WORK

Language-constrained path querying, Yannakakis [12]. Hellings [3, 4], RDF [13], etc [1, 2, 7, 9, 11]

Special graph query languages. SPARQL, cypher

Languge integration problem: special DSLs for SQL, ORM, Linq

Parser-combinators

Scala combinators for graph [6]

GLL [10] arbitrary context-free grammars, SPPF [8]

Meerkat [1] [5] — combi

etc

3 PARSER-COMBITATORS FOR PATH QUERYING

In this section we present our implementation of and describe some details.

Our implenemtation is based on Meerkat library. We need only some steps for generalization.

As far as linear input is a one of case of graph, it is possible to provide input abstraction which make possible to generalize combinators.

SPPF may be an arbitrary graph in opposite of linear input parsing.

Let we introduce an example. Graph. Grammar. In terms of combinators.

Interface for Neo4J bata base

Extensible solution

An architecture of the solution.

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[1] https://github.com/meerkat-parser/Meerkat

GRADES-DNA'18, July 2018, El Paso, Texas USA

ACM ISBN 123-4567-24-567/08/06…$15.00
https://doi.org/10.475/123_4

4 EVALUATION

Some experiments on real data and comarison with existing solutions

Classical RDFs

Integration with Neo4J

Static code analysis

Comparison with GLL

Comparison with [6]

5 CONCLUSION

We propose a native way to integrate language for language-constrained path querying into general purpose programming language. We implement it and show that our implementation can be applied for real problems.

Code is available on GitHub:

Future work is

SPPF processing for debugging and results processing

Attributed grammars processing to provide mechanim for semantics calcualtion

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