



Generalized LL Parsing Generalization

An affordable PXI-based microwave non-linear characterization platform



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Motivation

Nowadays input data for parsing algorithms are not limited to be linear strings, and context-free grammars are used not only for programming languages specification. One of classical examples is a context-free path querying for graph data bases where input is a graph and path constraints are specified by a grammar. There are also other generalizations of parsing, such as multiple input GLL parsing presented at Parsing@SLE-2016 by Elizabeth Scott and Adrian Johnstone, Abstract LR parsing [?] and other techniques for parsing of dynamically generated strings. Thus, the goal of our work is to create an abstract framework for parsing based on generalization of GLL parsing algorithm [?] proposed by Elizabeth Scott and Adrian Johnstone.

Bar-Hillel Theorem

All existing applications seem to be special cases of the Bar-Hillel [?] theorem for context-free and regular language intersection, and can be generalized, but today many of them are developed as stand alone solutions.

Results

- GLL-based parsing framework
- GLL-based context-free path querying algorithm [?] implemented by the authors is faster than solution which was presented at ISWC-2016 [?].
- We have some experience in the areas mentioned above [?, ?].

Future Research

- Mechanization in Coq
- Tool for
- Context-free compressed data processing

Generalized LL

- Arbitrary grammars
- Cubic time. Linear
- SPPF as input

Linear input parsing

- Classical
- Multilexem

Graph parsing

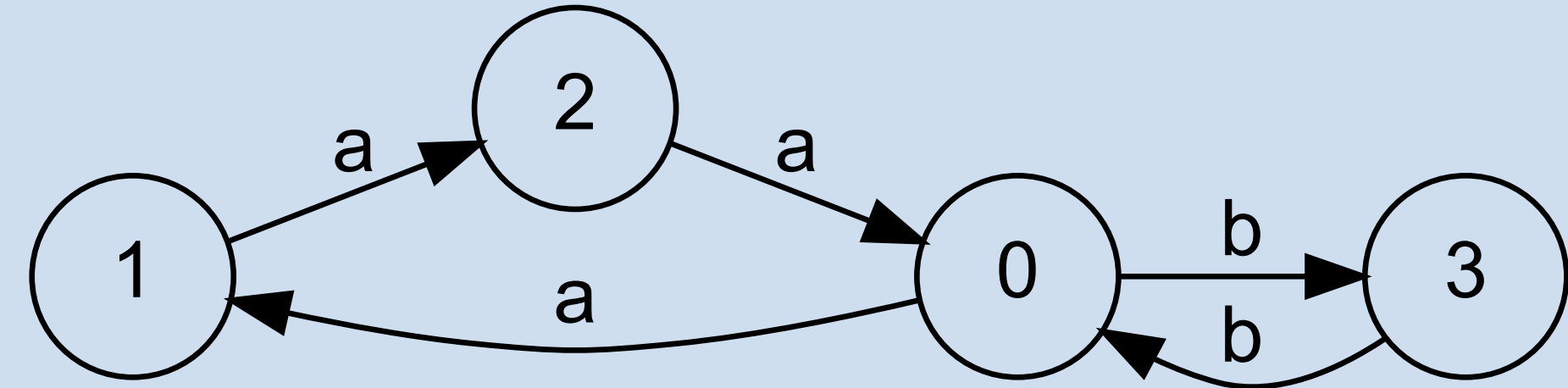
Graph DB, metagenomic assemblies etc.

String-embedded code p CF compression

Compressed data processing

Generalized LL generalization

All above is graph parsing!



$S ::= a S b$
 $S ::= \text{Middle}$
 $\text{Middle} ::= a b$

