

P.O.Box 8718, Beijing 100080, China	Journal of Software, Feb. 2005,16(2):174-183
E-mail: jos@iscas.ac.cn	ISSN 1000-9825, CODEN RUXUEW, CN 11-2560/TP
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## 程序设计语言的GLR优化分析

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Received 2004-07-09; Accepted 2004-10-10

### Abstract

The motivation of adopting the Generalized LR (GLR) parsing algorithm to construct parsers for programming languages is presented. A multi-level strategy for optimizing a GLR parser and the necessary runtime control mechanisms are introduced to the GLR parsers for flexible disambiguation and for invoking semantic actions attached to grammar rules while avoiding the "delayed semantic action" problem. The algorithm has been implemented in VPGE, a visual parser generation environment. Experimental results show that the speed of the generated GLR parsers is comparable to LALR(1) parsers generated by GNU's Bison when parsing deterministic programming languages.

Li H, Jin MZ, Xu F, Zhang M. Optimized GLR parsing for programming languages. *Journal of Software*, 2005,16(2):174-183.  
<http://www.jos.org.cn/1000-9825/16/174.htm>

### 摘要

阐述了在程序设计语言语法分析器的构造中采用通用LR(generalized LR,简称GLR)分析算法的动机.提出了一个多层次的优化策略,加快了GLR分析器的分析速度.为基本的GLR算法增加了必要的运行时控制机制,以实现语法分析时调用文法规则附带的语义动作,化解输入串的二义性,同时避免GLR分析器可能存在的语义动作延迟问题.优化后的算法已在一个可视化语法分析器自动生成环境VPGE中实现.实验结果表明,在分析确定性的编程语言时,自动生成的GLR分析器的分析速度与自由软件基金会的Bison生成的LALR(1)分析器的分析速度有可比性.

基金项目: Supported by the National High-Tech Research and Development Plan of China under Grant No.2001AA113100 (国家高技术研究发展计划(863))

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