

*The University of Alabama
Department of Computer Science
Colloquium Series Speaker*

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"Automatic generation of language-based tools and Grammar-based Systems"

**Monday, March 7th
11:00 a.m., HO 108**

Abstract:

Formal language theory is an important part of theoretical computer science. Despite that, it has been applied in many practical applications. The importance of context-free grammars and attribute grammars for compiler construction and to automatic generation for compilers/interpreters is already well known. Moreover, researchers soon recognized the possibility that many other language-based tools could be generated from formal language specifications. Such tools can be generated automatically whenever they can be described by a generic fixed part that traverses the appropriate data structures generated by a specific variable part, which can be systematically derivable from the language specifications. On the other hand, grammars can be found in many other applications, which are not so related to their original application - language description and implementation. We call such systems grammar-based systems. A grammar-based system is any system that uses a grammar and/or sentences produced by this grammar to solve various problems outside the domain of programming language definition and its implementation. The vital component of such a system is well structured and expressed with a grammar or with sentences produced by this grammar in an explicit or implicit manner. In this talk several language-based tools will be presented (e.g. editors, inspectors, debuggers and visualizers/animations) which are automatically generated using an attribute grammar-based compiler generator called LISA. Furthermore, several examples of our grammar-based systems will be given to show usefulness of grammars in software engineering.