11-722: Grammar Formalisms
Spring Term 2009
Language Technologies Institute
Carnegie Mellon University

Course Syllabus

Time and Place:
T-Th, 3:00-4:30 Wean Hall 5304

Instructors:

Lori Levin	Associate Research Professor Language Technologies Institute Newell-Simon Hall 4631 412-268-6193 `lsl@cs.cmu.edu`
Alan Black	Associate Professor Language Technologies Institute 4525 Newell-Simon Hall 412-268-6299 `awb@cs.cmu.edu`

Prerequisites: Permission of instructors, or background in linguistics, computational linguistics, language technologies, or psycholinguistics.

Requirements: three grammars (LFG, HPSG, and CCG) and a term project.

Course Description:

The goal of this course is to familiarize students with grammar formalisms (and the underlying linguistic theories) that are commonly used for research in computational lingusitics, language technologies, and lingusitics. We hope to have students from a variety disciplines (linguistics, computer science, psychology, modern languages, philosophy) in order to cover a broad perspective in class discussions. Comparison of formalisms and the underlying theories will lead to a deeper understanding of human language, which can be of benefit in the design of corpus based methods as well as knowledge based methods.

The formalisms will include: Head Driven Phrase Structure Grammar, Lexical Functional Grammar, Tree Adjoining Grammar, and Categorial Grammar. We will also cover Penn Treebank, Prague Treebank, CCG treebank, and other treebanks as time permits. If time permits we will also cover grammar induction from treebanks.

We will cover the treatment of basic syntactic and semantic phenomena in each formalism. The phenomena include: transitivity alternations, clause complementation, long distance dependencies, and coordinate structures.

We will use both "toy" sentences (artificially constructed to illustrate the phenomena) and real sentences from treebanks and other sources.

Texts:

- *Syntactic Theory: A Formal Introduction* by Ivan Sag, Thomas Wasow, and Emily Bender
- *Implementing Typed Feature Grammars*, Ann Copestake, CSLI, 2002.
- *Grammar Writer's Cookbook*, Miriam Butt et al., CSLI, 1999
- *Lexical Functional Syntax*, Joan Bresnan, Blackwell, 2000.
- *Lexical-Functional Grammar*, (Syntax and Semantics, Volume 34) by Mary Dalrymple, Academic Press.
- Readings on CCG to be announced.