

11-722: Grammar Formalisms
Spring Term 2012
Language Technologies Institute
Carnegie Mellon University
Course Syllabus

Time and Place:

T-Th, 3:00-4:30 DH 1209

Instructors:

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

Requirements: two implemented grammars. One grammar will be an English Lexical Functional Grammar. The other will be in another human language or another formalism.

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 linguistics, language technologies, and linguistics. We hope to have students from a variety of 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 Categorical Grammar. We may 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 and TAG to be announced.

Schedule

January 17	History of Grammar Formalisms
January 19	The English Test Suite
January 24	Lexical Functional Grammar
January 26	Lexical Functional Grammar
January 31	Lexical Functional Grammar
February 2	Lexical Functional Grammar
February 7	Lexical Functional Grammar
February 9	Lexical Functional Grammar
February 14	Lexical Functional Grammar
February 16	Lexical Functional Grammar
February 21	Generative Capacity
February 23	Formal Semantics
February 28	Formal Semantics
March 1	Head Driven Phrase Structure Grammar
March 6	Head Driven Phrase Structure Grammar
March 8	Head Driven Phrase Structure Grammar
March 13	Spring Break
March 15	Spring Break
March 20	Head Driven Phrase Structure Grammar
March 22	Head Driven Phrase Structure Grammar
March 27	Head Driven Phrase Structure Grammar
March 29	Head Driven Phrase Structure Grammar
April 3	Tree Adjoining Grammar
April 5	Tree Adjoining Grammar
April 10	Categorial Grammar
April 12	Categorial Grammar
April 17	Categorial Grammar
April 19	Carnival
April 24	Categorial Grammar
April 26	To be announced
May 1	To be announced
May 4	To be announced