Introduction to Natural Language Syntax and Parsing: L95

Lecture 1: Introduction

Ann Copestake (standing in for Simone Teufel)

Department of Computer Science and Technology
University of Cambridge

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Outline of today’s lecture

NLP and linguistics

Course structure

Examples of analysis

To do list
Analysis of text

- Analysis of text is the core of NLP applications.
- Level and type of analysis attempted depends on application:
  - Depth of analysis? Meaning?
  - Explicit linguistic analysis vs surface-based techniques?
  - Precision? e.g., testing for grammaticality vs processing noisy data.
- Also work on language generation and regeneration.
NLP and linguistics

The computational modelling of human language (NLP/computational linguistics/CL)

1. **Morphology** — the structure of words.
2. **Syntax** — the way words are used to form phrases.
3. **Semantics**
   - **Compositional semantics** — the construction of meaning based on syntax.
   - **Lexical semantics** — the meaning of individual words.
4. **Pragmatics** — meaning in context.
NLP courses in the ACS

- L90: Overview of NLP
- L95
- L101: Machine learning for language processing
- R250: Advanced topics
- Also relevant material in background module: M20 — Data Science: principles and practice
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Course structure

Syllabus for L95

- Linguistics for NLP — morphology, syntax, semantics and pragmatics [6 lectures, Simone Teufel (and AAC)]
- Parsing - grammars, treebanks, representations and evaluation, statistical parse ranking [8 sessions, Paula Buttery]
- Interpretation — compositional semantics and entailment, pragmatic inference [2 lectures, Simone Teufel]
- Four take home assignments: first available today, hand in by October 21.
- One practical: start in week 6, hand in January 14.
Course structure

Resources for L95

On website:

- slides (on website after lecture).
- two extensive handouts: please read before the lectures (do exercises and ask questions!)
- introductory logic worksheet
- assessed exercises (and associated resources)
- Possibly useful background: L90 lecture notes

Recommended Book: Jurafsky and Martin (2009)
See also suggestions at the end of the handouts.
Assessment for L95

- Four ‘ticked’ assignments: first due on October 21 (hand in to student admin). Each worth 5%.
- Practical report, due next term.
Examples of analysis

Chromosomal alterations were detected in humans exposed to butadiene.

- Morphological analysis and POS assignment
- Noun phrase bracketing
- Syntax tree
- Grammatical relations
- Logical form
To do

- Before the next lecture (Monday): read sections 1–4 of ‘Introduction to Linguistics’ handout and do the associated exercises.
- Start logic worksheet (let me know if you get stuck).
- Look at first assessed exercise.