CS288: Computational Models of Discourse
Tuesdays and Thursdays, 11:30 a.m. - 1:00 p.m.
Maxwell-Dworkin Laboratory, room 221

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TEXT: The required reading for this course consists of technical papers handed out in class (see syllabus). In addition, the following reference readings will be on reserve in Gordon McKay Library.


COURSE WORK AND GRADES:

Course work includes problem sets (4), presentation to the class of a technical paper, and a course project.

Because this is a graduate course, students are expected to read assigned papers before the associated class meeting and to participate actively in class discussions. In addition, beginning with the third class meeting, for each day's reading in the course, students will submit a question on either the required reading or one of the background or optional papers. These questions are to be submitted by email preferably the night before the class, but no later than 9AM of the day of the class.

In each section of the course there will be class meetings at which a set of technical papers are read and discussed. Each student will be expected to present and lead the discussion of one such paper.

As part of the course project each student is required to submit a project proposal approximately one month before the project is due and to give a presentation to the class of the project approximately one week before the project is due.

Exercises: 35%
Class Participation: 10% (including the questions for each class meeting)
Paper Presentation: 15%
Course Project: 40% (including 10% for presentation)
SYLLABUS: (PROVISIONAL AND SUBJECT TO CHANGE)

1. Introduction. Overview of course and analysis of sample dialogues.
   If we had syntactic and semantic processors that enabled generation and interpretation of individual utterances, what would remain to be accounted for? What are the main problem areas encountered in building dialogue systems or text generation and interpretation systems? What general approaches have been taken? Analysis of sample dialogues. How has knowledge about natural-language dialogue informed human-computer interface design?
   • Background Reading: Grosz, Pollack & Sidner, 1989 [skim].

2. Discourse Structure, Overview (2 class meetings)
   • Reading: Levy, 1979; Grosz & Sidner, 1986 [Sections 1-6]
   • Background: Grosz (21) in Readings; Polanyi, 1985, 1988; Hobbs, 1979; Reichman-Adar, 1984

Assignment 1: Discourse collection and naïve analysis; Due February 22

3. Intentional Structure (7 Class Meetings)
   a. Speech Act theory and AI planning systems: the basic approach
      • Reading: Grice, 1969; Jurafsky & Martin, Chapter 19
      • Background: Allen & Perrault (26); Carberry, 1988; Bruce (24), Wilensky (27) in Readings; Sidner, 1985; Searle, 1975
      • AI Background: Russell & Norvig, 1994, Chaps. 11-13
   b. Collaborative planning and intentional structure
      • Reading: Grosz & Sidner, 1990 [up to Section 5.1]; Hunsberger, 1998; Lochbaum, 1998
      • Background: Bratman, 1992; Grosz & Kraus, 1996; Cohen & Levesque, 1991; Konolige & Pollack, 1989; Kinny et al., 1994; Grosz et al., 1999
   c. Applications to interface design
      • Reading: Rich & Sidner, 1998; Ortiz et al., 2000
      • Optional: Bretier & Sadek, 1996
   d. Empirical studies of speech acts & dialogue
      • Reading: Guinn, 1996; Reithinger & Maier, 1995; Walker & Whittaker, 1999
   e. Coherence relations and Abduction
      • Reading: Hobbs, 1996; Corston-Oliver, 1998
      • Background: Mann & Thompson, 1983

Assignment 2: plan recognition; due Tuesday, March 14
4. Text segmentation and summarization (3 class meetings)
   a. Text segmentation
      • Reading: Hearst, 1997; Beeferman, et al., 1999; Morris & Hirst, 1991
   b. Summarization
      • Reading: Kupiec et al., 1995; Mittal, et al., 1999; Marcu, 1999

Assignment 3: segmentation & summarization: due March 23

5. Anaphora and Attentional State (5 class meetings)
   a. Basic approaches to pronominal reference
      • Reading: Jurafsky & Martin, Chapter 18
      • Background: Charniak (19), Hobbs (20) in Readings
   b. Centering theory framework
      • Reading: Grosz, Joshi & Weinstein, 1995
      • Background: Robinson, 1981; Sidner (22) in Readings; Joshi and Weinstein, 1997; Grosz and Sidner, 1997
   c. Psycholinguistic Studies of Anaphora
      • Reading: Gordon, Grosz, Gilliom, 1993
   d. Centering: Cross-linguistic studies
      • Reading: one of Kameyama, 1988; diEugenio, 1997;
   e. Hybrid approaches & empirical investigations of anaphora
      • Reading: Kehler, 1993, 1994; Aone & Bennett, 1995; Tetreault, 1999
      • Background: Brennan et al., 1987; Dahl, 1986; Dalymple et al. 1991; Kameyama, 1997

Assignment 4: Anaphora processing: due April 18

6. Prosody and Discourse (4 class meetings)
   a. Background
      • Reading: Pierrehumbert & Hirschberg, 1990
   b. Discourse Structure
      • Reading: Hirshberg & Nakatani, 1996; Nakatani, 1996
      • Background: Grosz & Hirschberg, 1992; Nakatani et al., 1995, Annotation guide
c. Implicature
   • Grice, 1975; Kronfeld, 1986; Hirschberg, 1984

d. Dialogue Acts and Summarization
   • Chen & Withgott, 1992; Shriberg et al., 1998; Jurafsky et al., 1998

Course Project Schedule:
   Proposal due April 6 (recommended) to 13 (last date!)
   Project presentations May 4 and May 9
   Project due Monday, May 15 at 5:00 PM