TITLE : Computational Linguistics 2: Semantics, Pragmatics and Discourse

COURSE CODE: CL3.202

CREDITS : 3-0-0-4
TYPE-WHEN : Monsoon 2021
FACULTY NAME : Radhika Mamidi
PRE-REQUISITE : NLP-1 or CL-1

OBJECTIVE : To introduce the students to apply the basic concepts of semantics and pragmatics computationally. For this the key notions emphasized are: understanding the structure of texts, meaning in text, contextual interpretation of text and representation of meaning in context.

COURSE TOPICS :

I SEMANTICS

Background for studying word meaning and sentence meaning, sentence meaning and propositional content; sense and reference; referent, extension, prototype, stereotype; deixis and definiteness; predicates, referring expressions, universe of discourse;

- properties of sentences - analytic, contradiction, entailment; properties of predicates - reflexive, symmetry, transitive.
- Word meaning and sentence meaning, content word and grammatical word, contextual variation; Speaker meaning vs Sentence meaning..
- Building resources using Lexical semantic relations - Synonymy, Antonymy, Hyponymy, Troponymy, Meronymy; Metaphor and Metonymy; Polysemy and Homonymy; Semantic fields; Lexical ambiguity; Building dictionaries; Ontologies.
- Formal representation of natural language - semantic features, case frames, semantic primitives.
- Logic, notation for simple propositions; connectives – and, or, but, if etc.
- Formal Semantics

II PRAGMATICS AND DISCOURSE: Pragmatics and Discourse analysis as a study of context dependent aspects of meaning; text, co-text, context and relevance.

<u>Computational Discourse analysis:</u>

- Studying Structure of text and coherence; exchange structure and conversational analysis; turn taking; deixis; anaphora; ellipsis; discourse connectives and relations; Structural analysis of different kinds of texts;
- Memory and knowledge representation as schemas - frames, scripts and story grammar.

- Generation and processing of texts: Sentiment Analysis. Humour Analysis.

Computational Pragmatics:

- Language Understanding; Meaning beyond textual context; speaker's intention and hearer's inference; inference - bridging inferences, causal and spatial inferences, elaborative and restrictive inferences;

- Application of pragmatic concepts in Dialogue Systems: conversational implicature, conventional implicature, entailment and presupposition; co-operative interaction and Gricean maxims; speech act theory; language as action, performatives, direct and indirect speech acts and felicity conditions; politeness maxims;

- Dialogue data annotation: Dialog Acts, Rhetorical Structure Theory

SEMINARS: Students will be expected to read research papers on various topics and present in class.
PROJECT: Students will do term projects which will include issues related to semantics, pragmatics and discourse.
Home assignments and Quizzes are part of evaluation,

PREFERRED TEXT BOOKS:

James R. Hurford & Brendan Heasley (1983). SEMANTICS - a course book. Cambridge University Press.
Daniel Jurafsky & James H. Martin (2000); Speech and Language Processing, Pearson Education/Prentice Hall.
Judith Greene (1986). Language Understanding - a cognitive approach. Open University Press.

References:
Lyons, John. (1977). Semantics. Cambridge University Press.
Levinson, Stephen C. (1983). Pragmatics. Cambridge University Press.
Leech, Geoffrey. (1983). Principles of Pragmatics. Longman.
Brown, G and Yule, G. (1983). Discourse Analysis. Cambridge University Press.
Cutting, Joan (2002). Pragmatics and Discourse: A resource book for students.
Allen, James. (1994). Natural Language Understanding. Pearson.

GRADING: HA30%, Seminar 10%, Project 20+20%, Quiz 20%
OUTCOME: Students will have a good understanding of semantic and contextual analysis of texts which will enable them in building text processing tools and

systems.