GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY
(UGC Autonomous)
Cheeryal (V), Keesara (M), Medchal Dist.,Telangana-501301

20CS32019-NATURAL LANGUAGE PROCESSING
(PROFESSIONAL ELECTIVE–III)

B.Tech. CSE (AIML) - III Year, II Sem.

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Pre-requisite(s):
20CS21001-DATA STRUCTURES

Course Objectives
Develop ability to
1. Understand the Structure of Words and Structure of Document.
2. Learn different Parsing Algorithms and Models for Ambiguity Resolution in Parsing.
3. Understand encoding ambiguity in the Logical form, verbs and states in Logical form.
4. Explain Predicate Structure and Discourse Processing.
5. Demonstrate different language modeling Techniques.

Course Outcomes (COs)
At the end of the course, student would be able to
CO1. Apply different methods to determine the Structure of Words and Documents.
CO2. Perform syntax analysis on a given natural language text.
CO3. Apply the concepts of predicate logic in the context of argument and its meaning representation.
CO4. Apply discourse processing techniques to a given conversation.
CO5. Analyze and evaluate different Language Modeling Techniques.

UNIT-I
Finding the Structure of Words
Words and Their Components, Issues and Challenges, Morphological Models
Finding the Structure of Documents
Introduction, Methods, Complexity of the Approaches, Performances of the Approaches.

UNIT-II
Syntax Analysis
Parsing Natural Language, Tree banks: A Data-Driven Approach to Syntax, Representation of Syntactic Structure, Parsing Algorithms, Models for Ambiguity Resolution in Parsing, Multilingual Issues

UNIT-III
Semantic and Logical Form
Semantics and logical form, word senses and ambiguity, the basic logical formal language, encoding ambiguity in the logical form, verbs and states in logical form, thematic roles, speech acts and embedded sentences and defining semantics structure model theory.

UNIT-IV
Predicate
Argument Structure, Meaning Representation Systems.
Discourse Processing
Cohesion, Reference Resolution, Discourse Cohesion and Structure.

UNIT-V

Language Modeling

Introduction, N-Gram Models, Language Model Evaluation, Parameter Estimation, Language Model Adaptation, Types of Language Models, Language-Specific Modeling Problems, Multilingual and Cross lingual Language Modeling.

TEXT BOOK(S)

1. Multilingual natural Language Processing Applications: From Theory to Practice – Daniel M. Bikel and Imed Zitouni, Pearson Publication, 2012.(Unit I ,II & V)
2. Natural Language Processing and Information Retrieval: Tanvier Siddiqui, U.S. Tiwary, Oxford Higher Education, 2008. (Unit III & IV)

REFERENCE BOOK(S)

1. Speech and Language Processing - Daniel Jurafsky & James H Martin, Pearson Publications, 2008.