

Devi Ahilya University, Indore, India Institute of Engineering & Technology				I Year M.E. (Computer Engineering Sp. in Software Engineering) (Full Time)			
Subject Code & Name	Instructions Hours per Week			Credits			
SER2E1	L	T	P	L	T	P	Total
Speech andLanguageProcessing	3	1	2	3	1	1	5
Duration of Theory Paper: 3 Hours							

Objective: To gain the knowledge for developing advanced technology of computer systems like speech recognition and machine translation.

Prerequisite: Discrete structures, Finite automata, information retrieval and Context-free Grammar

SPEECH ANDLANGUAGEPROCESSING

UNITI

Natural Language Processing, Applications, Ambiguity, Morphology, Parsing with Finite State Transducers, Regular Expressions, Stemmer, Spelling errors.

UNITII

Computational Phonology: speech sound, phonetic transcription, text to speech; Pronunciation Variations, Bayesian Method to spelling and pronunciations, Minimum Edit Distance, Weighted Automata, N-grams.

UNITIII

HMM and speech recognition, Viterbi algorithm, Acoustic processing of speech, Feature Extraction, Speech Synthesis; Part-of-Speech Tagging: rule based, stochastic, transformation based.

UNITIV

Syntax Processing: Parsing with CFG, CKY parsing and the Earley parser, Probabilistic parsing; Semantic Processing: Meaning representation, First Order Predicate Calculus. Lexical Semantics: Internal structure of words, thematic roles, Primitive decomposition, WordNet.

UNITV

Word sense disambiguation; Information Retrieval: Vector space model, Improving user queries; Pragmatic Processing: Discourse; Natural Language Generation, Machine Translation.

TEXTBOOKS:

- [1] D. Jurafsky and J.H. Martin; Speech and Language Processing; Processing; Prentice Hall; 2000.
- [2] 2. C. Manning and H. Schutze, "Foundations of Statistical Natural Language Processing",
- [3] JamesAllen."NaturalLanguage Understanding",AddisonWesley,1994.

List of Assignment in NLP Lab:

- Problem based on Stemming Algorithm.
- Problem based on Part of Tagging.
- Problem based on Parsing.
- Problem based on Information Retrieval.
- Case study on Different NLP Techniques
- Cricket Game Prediction.
- Machine Translation from English-Hindi.
- Query Expansion for Information Retrieval.
- Emotion detection for texts.
- Any other problem based on emerging trends in speech & language processing.