THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Foundations of Speech and Language Processing

CSE 5525

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate

Course Components:
Lecture

Course Description:
Fundamentals of natural language processing, automatic speech recognition and speech synthesis; lab projects concentrating on building systems to process written and/or spoken language.

Prerequisites and Co-requisites:
Prereq: 3521 or 5521, and 5522, Stat 3460, or 3470.

Course Goals / Objectives:
- Master the fundamentals of symbolic methods in language processing tasks, such as natural language parsing
- Be competent with fundamental concepts for natural language processing and automatic speech recognition, such as "hidden Markov models"
- Be competent with fundamental concepts in text-to-speech synthesis, such as concatenative synthesis and text analysis
- Be familiar with a finite state framework integrating all of speech processing
- Be familiar with a toolkit for text classification, part-of-speech tagging and sentiment mining
- Be familiar with methods of constructing speech recognition and synthesis systems.
- Be exposed to current speech and language processing research
- Be exposed to toolkits for speech recognition and speech synthesis

Course Topics:
- Course introduction, part-of-speech tagging
- HMMs, expectation maximization and search
- Parsing
- Word senses
- Language modeling
- Text classification and opinion mining
- Human hearing, acoustics, and phonetics
- Finite state transducers and automatic speech recognition toolkits
- Dynamic time warping and acoustic modeling
- Text analysis and speech synthesis
- Language processing in context (systems)
- Quizzes and in-class assignments
- Project presentations

Designation:
Elective