

# Lecture 4: Speech Analysis and Linguistics

## Linguistics Basics

**Instructor: Dr Chiranjeevi Yarra**

Speech lab, LTRC



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# What is Linguistics?

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- It traditionally encompasses **semantics**, **syntax**, and **phonology**.

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- Speakers produce language within the limits of that systemization and selection.
- **Context sensitive and dependent** information will help to make sense from the language.

# Units of language

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- Obtaining units a challenging task
  - Need to **segment the connected speech** into chain of sounds.
  - Units of written and spoken system are different and they **do not have exact analogy between them**.



# What is a phoneme?

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- Represent the subset of phonetic phenomena that are **crucial for meaning**.
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- Speech units should have clear discrimination in the **acoustic and articulatory realization**.
- Represents certain **gross characteristics of speech sounds** that are adequate for description and classification of words in vocabulary of the targeted language.
- **Phoneme** is used to denote any of the minimal units of speech sound in a language that can serve to **distinguish one word from another**.
- Phoneme is symbolized resemblance with English letter.

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- Coarticulation causes perceptual variations to the phoneme. These variations are categorical.
  - Modified phonemes **due to the coarticulation** is called allophones.
  - Ex: Pin vs Spin; Bat vs Bad.
  - The variations can be represented with small set of symbols or diacritics on the basic phoneme symbols.



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# What is a syllable?

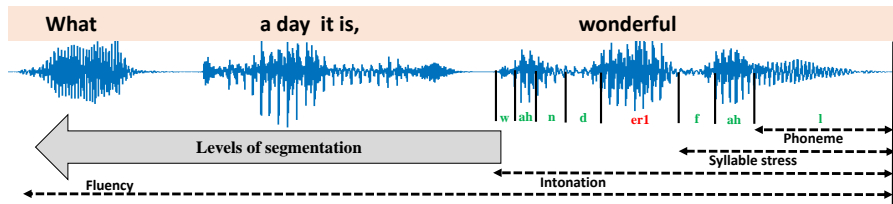
- Phonemes may not be contributed towards language meaning.
- These typically centered around the vowels, often referred to as syllable center or syllable nuclei.
- These can be thought as vocalic peaks (high amplitude and strong formant structures).

# What is a word?

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- It is a lexical item.
- Associated with Parts-of-Speech tags.
- Parts-of-Speech are based on traditional grammatical structures and lexical items in the language.

# Example



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- Phonetics refers to the study of speech sounds and their production, classification, and transcription.

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- Syntax is the study of the patterns of formation of sentences and phrases from words and the rules for the formation of grammatical sentences.
- Semantics is dealing with the study of meaning, including the ways meaning is structured in language and changes in meaning and form over time.
- It provides a vocabulary for us to answer the basic question who did what to whom.
- Individual words can also provide semantic information. Ex: Crow.

Thank you