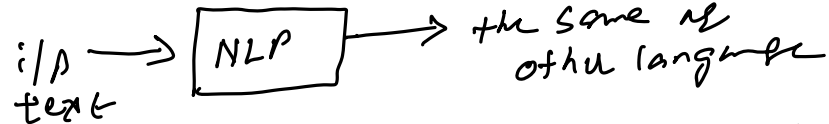
25-09-2021

Introduction to Natural Language Processing:

↳ Computer system which can-

(1) - analyse
(2) - attempt to understand and
(3) - produce one or more human language o/p text with i/p as English or any other language



Input: can be text, spoken i/p, keyboard i/p

NLP Task - translate to other language
- to understand
- represent the content of text (e.g. parse tree, on(cat, mat) for "cat is on mat")
↑ Predicate logic

- to build a database, sentence: "customer A purchased a pen, book, and PC customer B purchased 2 PC"
  ↓ DB

Can be queried by SQL →

customer	items	Qty
A	pen	1
	book	1
	PC	1
B	-	-
	-	2
	PC	

- Generate Summaries (10 pages to 1 page)
- maintain dialog with user (database)
- Information retrieval

"understand"? How to write a program that understands language?

How to measure/test if a computer (prog) has correctly understood the language?

"TT - Turing Test"

Limitations of Turing Test:- - System's Progress cannot be plotted in stages.

- the evaluation cannot be done at each stage, like it is done for in compiler for lexical analysis, syntax analysis, ...

In the absence of
step-by-step (stagely stage
test) its performance cannot be evaluated critically;

NLP → mostly Solved:- spelling check, text categorization, POS tagging
named entity recognition.

"The Jaipur department store"
"The Bhadasia bus depo"
"The modern school" is open

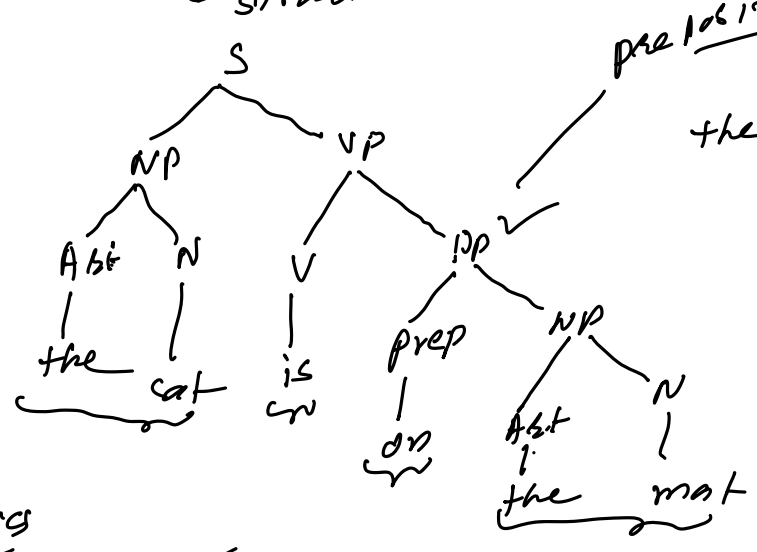
Terms essential for understanding of NLP ⇒

① syntax (and ambiguity)

↳ Form, structure (e.g. syntax tree)

"The cat is on the mat."

↓ structure



→ Structure only & no mention about meaning or semantics

Ambiguity ? "I saw man with telescope!"

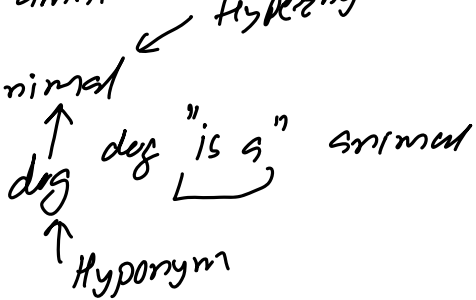
Given the text (any) - we check if it is grammatically ok.

↓ check syntax

(2) **Semantics** : study of meanings of words, and how they combine to form meaning of the entire sentence.

synonymy : fall, autumn.

hypernymy :



(3) **Pragmatics** How the language is used to accomplish the goals — influence the context of meaning which depends on situational and world-knowledge

(understand it)

Give me the salt.

↳ Could you please give me the salt? ↵

(5) Discourse and its analysis.

(e.g. discussion, a religious discourse)

↳ study of linguistic units larger than single sentence.

Ex.

a) John reads a book. He borrowed it from his friend.

↑ John

b) Alice understands that you like your mother, but she ....

↑ girl

↑ Alice ?
your mother ?

—xx—xx—