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MATA KULIAH : Pemrograman Bahasa Alami

KODE MATA KULIAH/SKS : TI 4043 / 2/1 SKS

KURIKULUM : 2015

VERSI : 0.0

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Minggu 1
Pertemuan 1

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KEMAMPUAN AKHIR YANG DIHARAPKAN

Mahasiswa dapat menjelaskan konsep dasar pemrograman bahasa alami

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MATERI POKOK

- Rule-based
- Probabilistic

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SUMBER PUSTAKA

1. Demaagdm, K., Oliver, A., Oostendorp, N., and Scott, K. (2012). *Practical Computer Vision with SimpleCV*. O'Reilly Media, Inc.

2. Jurafsky, D., Martin, J.H. (2009). SPEECH and LANGUAGE PROCESSING : An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition. Second Edition, Prentice Hall, Inc.

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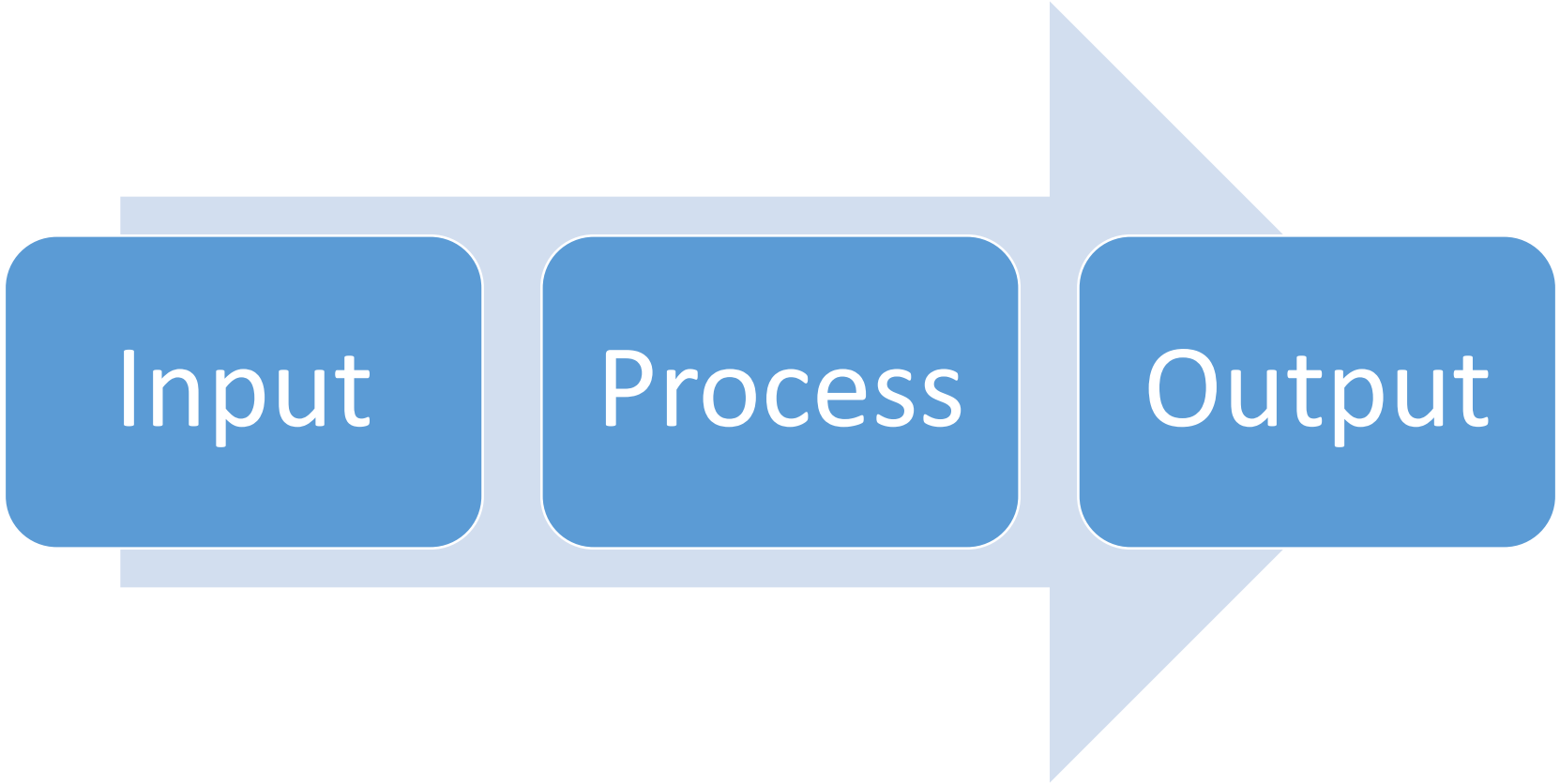
Mapping X to Y



input provided in a human language (natural language), and conversion of this input into a useful form of representation.

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NLP Primary Concern

getting computers to perform useful and interesting tasks with human languages

secondarily concerned with helping us come to a better understanding of human language

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Area of Implementation

- Speech Generation, Text Generation, Speech Understanding, Information Retrieval,
- Dialogue Processing, Inference, Spelling Correction, Grammar Correction,
- Text Summarization, Text Categorization,

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- Machine Translation – Translation between two natural languages.
- Information Retrieval – Web search (uni-lingual or multi-lingual).
- Query Answering/Dialogue – Natural language interface with a database system, or a dialogue system.
- Report Generation – Generation of reports such as weather reports

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Brief History

1970s – 1983:

Probabilistic methods for early speech recognition (Jelinek, Mercer)

Discourse modeling (Grosz, Sidner, Hobbs)

1957 – 1970s:

Use of formal grammars as basis for natural language processing (Chomsky, Kaplan)

Use of logic and logic based programming (Minsky, Winograd, Colmerauer, Kay)

1940s –1950s: Foundations

Development of formal language theory (Chomsky, Backus, Naur, Kleene)

Probabilities and information theory (Shannon)

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1993 – present:

Strong integration of different techniques, different areas.

1983 – 1993:

Finite state models (morphology) (Kaplan, Kay)

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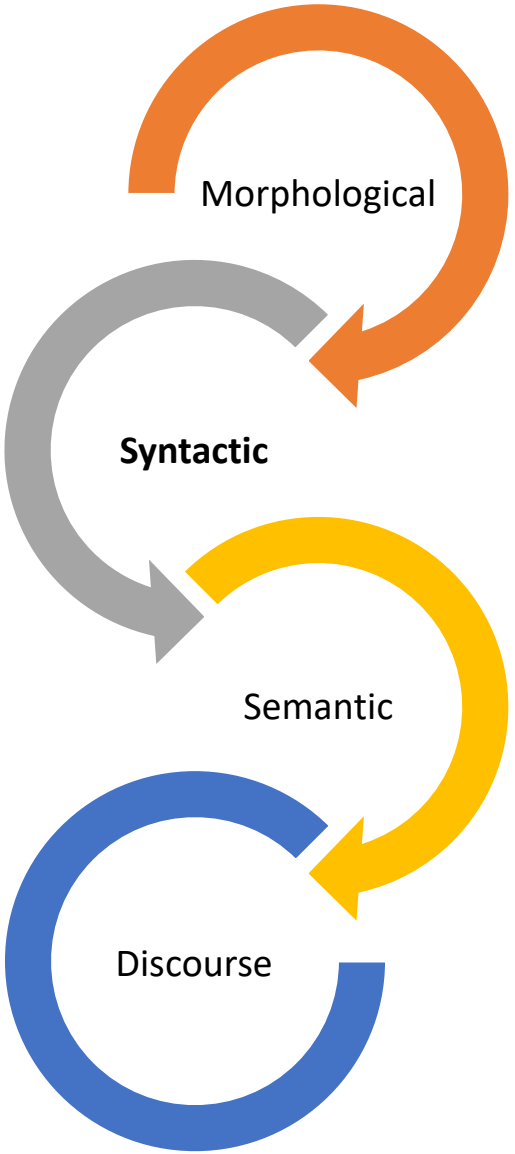
Natural language Understanding



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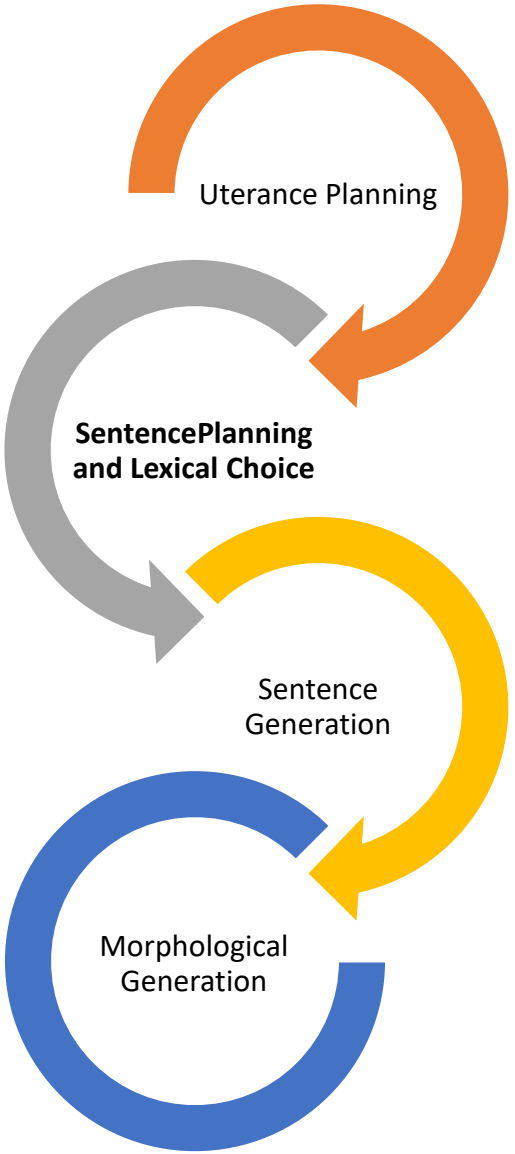
Natural language Generation



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POS TAG

- Part-of-speech tag of a word is one of major word groups

  (or its subgroups).
  - **open classes** -- noun, verb, adjective, adverb
  - **closed classes** -- prepositions, determiners, conjuctions, pronouns, particples

- POS Taggers try to find POS tags for the words.
- `duck` is a verb or noun? (morphological analyzer cannot make decision).
- A POS tagger may make that decision by looking the surrounding words.
  - `Duck!` (verb)
  - `Duck is delicious for dinner.` (noun)

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Lexical Processing

- The purpose of lexical processing is to determine meanings of individual words.
- Basic methods is to lookup in a database of meanings -- **lexicon**

- Word-level ambiguity -- words may have several meanings, and the correct one cannot be chosen based solely on the word itself.
  - bank in English
  - yüz in Turkish
- Solution -- resolve the ambiguity on the spot by POS tagging (if possible) or pass-on the ambiguity to the other levels.


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