



Cognitive Approach to Natural Language Processing

SD213

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Cognitive approach to NLP

■ *Challenge:*

- ▶ *Bring machine to deal with language*
- ▶ *Turing's imitation game*
- ▶ *Interpretation in context*
- ▶ *Relevance*

Two approaches to Natural Language Processing

■ NLP challenges

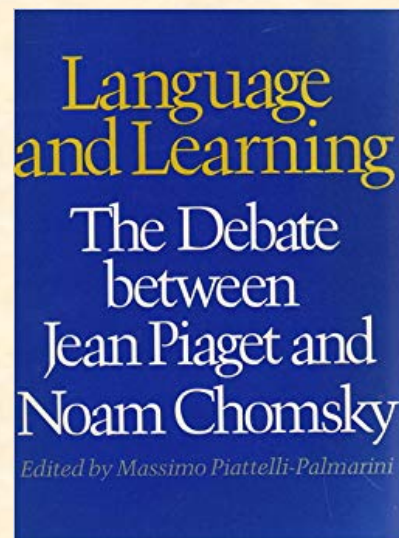
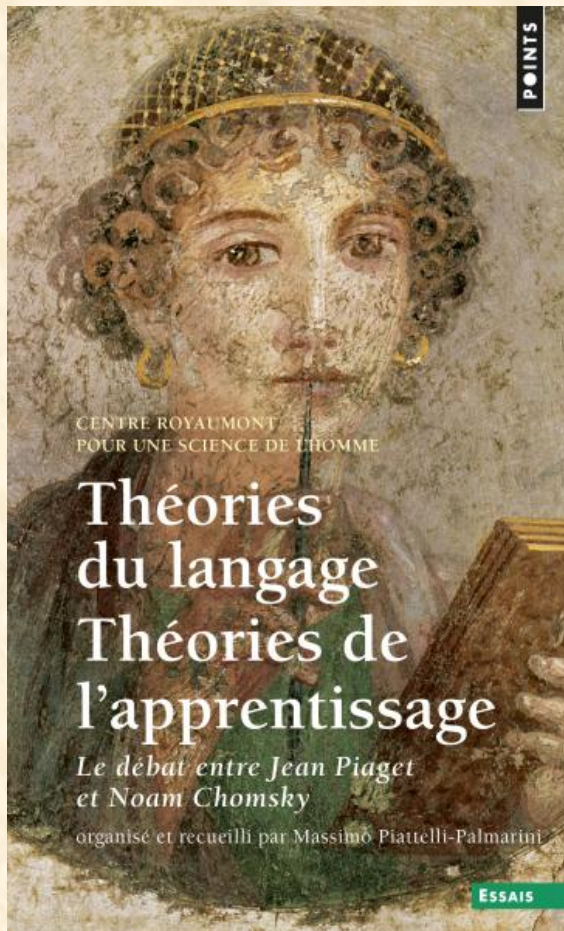
- ▶ text proofing, speech recognition, optical character recognition, text mining, spam filtering, speech synthesis, database indexing, Web search,
- ▶ machine translation, automatic summarization, text generation,
- ▶ dialogue based applications, human-machine interaction, explanation, help systems, computer assisted learning, ...

■ Constitutive of intelligence

- ▶ Turing's imitation game

■ Two flavours

- ▶ Statistical NLP (SDTSIA214)
- ▶ Cognitive NLP (SD213)



*In the early 1970s,
the great debate between
Noam Chomsky and Jean Piaget
about language
caught the attention
of the scientific audience.*

*Two opposing views,
but both were united
in their rebuttal
of empiricism.*

Cognitive approach to NLP

■ *This course deals with NLP techniques inspired by cognitive modelling*

▶ *Analysis of structures*

▶ *Exact computations*

▶ *Takes the word “processing” literally*

- *the ultimate goal is to reproduce computations that human individuals are supposed to perform when talking relevantly.*

▶ *Concepts studied here have a broader scope in AI*

- *reasoning, decision making, memory, symbolic machine learning...*

Cognitive approach to NLP

■ This course deals with NLP techniques inspired by cognitive modelling

▶ Syntactic processing

- Introduction to linguistics
- context-free grammars
- Basic parsing methods

▶ Semantic processing

- Knowledge representation
- Meaning representation
- Procedural semantics
- Aspect.

▶ Relevance

- Interest
- Newsworthiness
- argumentation

Cognitive approach to NLP

■ Teaching

- ▶ Lectures
- ▶ Lab sessions
- ▶ Small project
- ▶ Small quiz
- ▶ Web site:

teaching.dessalles.fr/CANLP