Natural Language Processing

NLP… What is it ?

NLP is the branch of Computer Science that focuses on the use of computers to **process** (*i.e. analyse, understand, generate, etc*) written and spoken **natural human languages** (*e.g., Arabic, English, French, Chinise, etc*).

NLP is a subfield of Artificial Intelligence.

NLP… Why ?

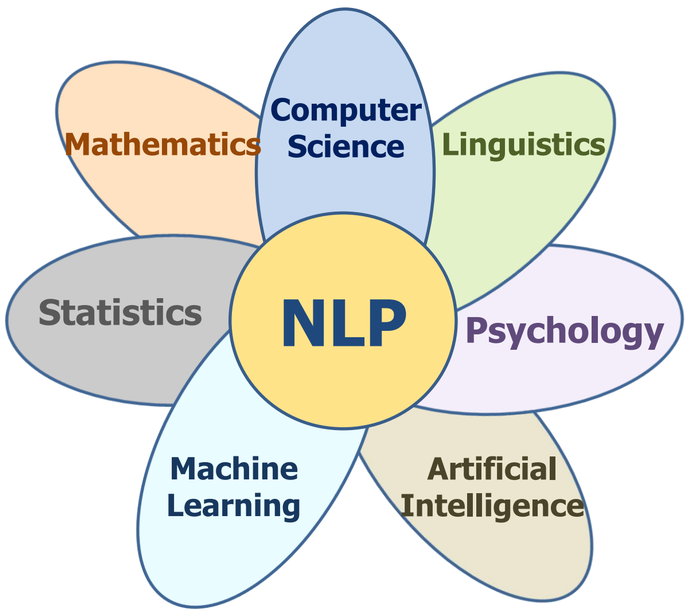
Theoretical Motivations:

Computational Modeling of the cognitive mechanisms underlying the acquisition, comprehension and production of human languages.

Practical Motivations:

Development of novel practical applications involving the intelligent and effective processing of human language by computer.

Interdisciplinary field



Examples of NLP Applications

- **Part-of-Speech Tagging**
- **Dependency Parsing**
- **Speech Recognition**
- **Document Summarization**
- **Information Retrieval**
- **Machine translation**
- **Named Entity Recognition**
- **Information Extraction**
- **Sentiment Analysis**
- **Semantic Parsing**
- **Text Categorization**
- **Word Sense Disambiguati**
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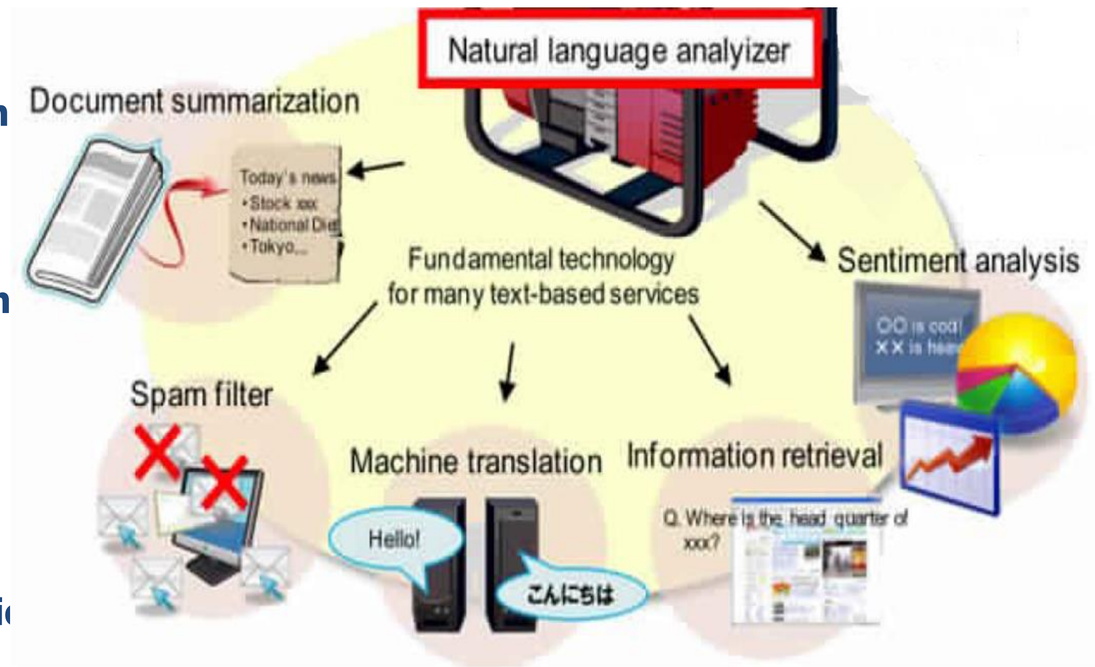


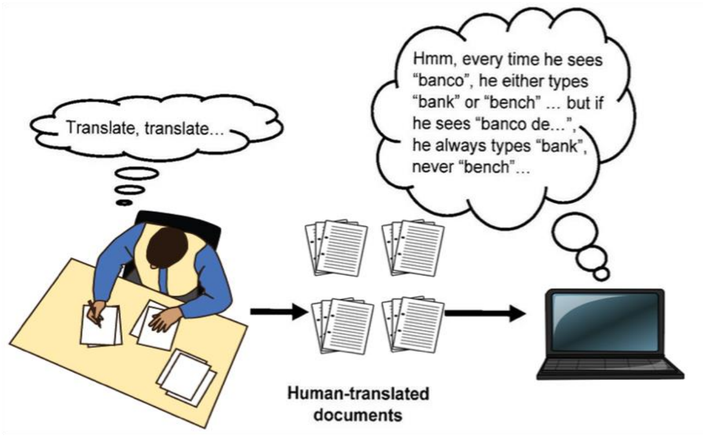
Approaches to NLP

Symbolic Approaches

Rule-based Modeling of Linguistic Knowledge + Reasoning Mechanisms.

Empirical Approaches

Large corpora of real world examples.
Statistical Models.
Machine Learning Techniques.

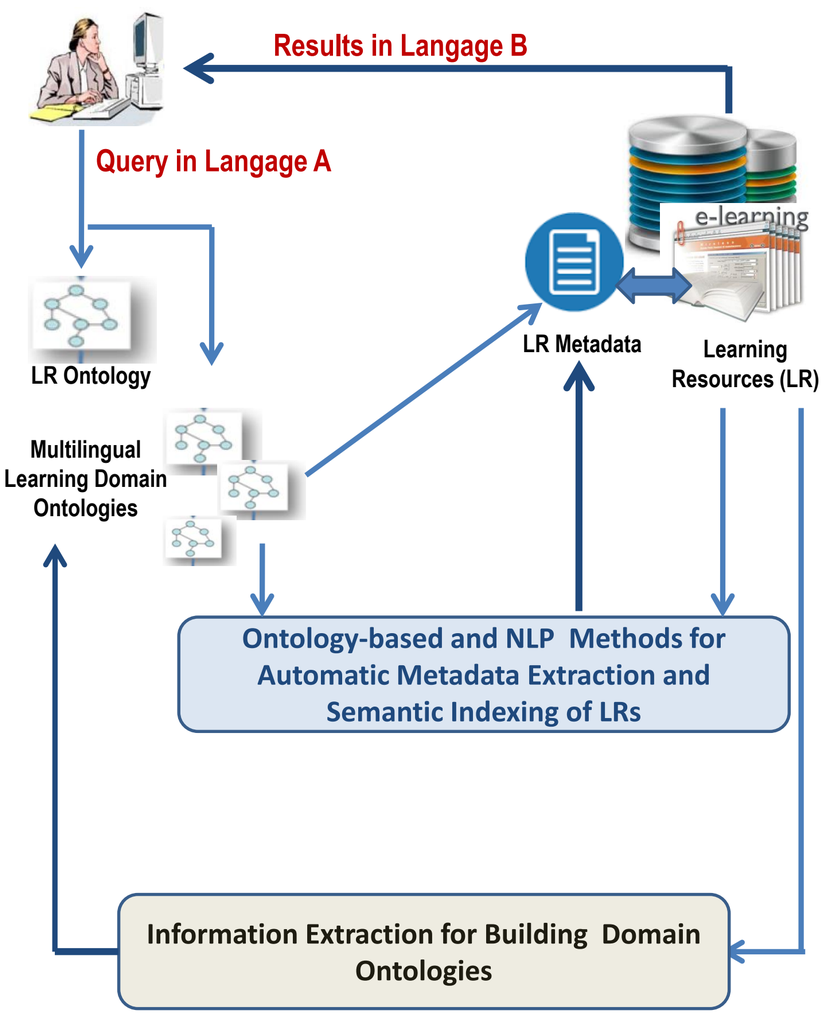


Hybrid Approaches

NLP Application Domains of Interest

Education

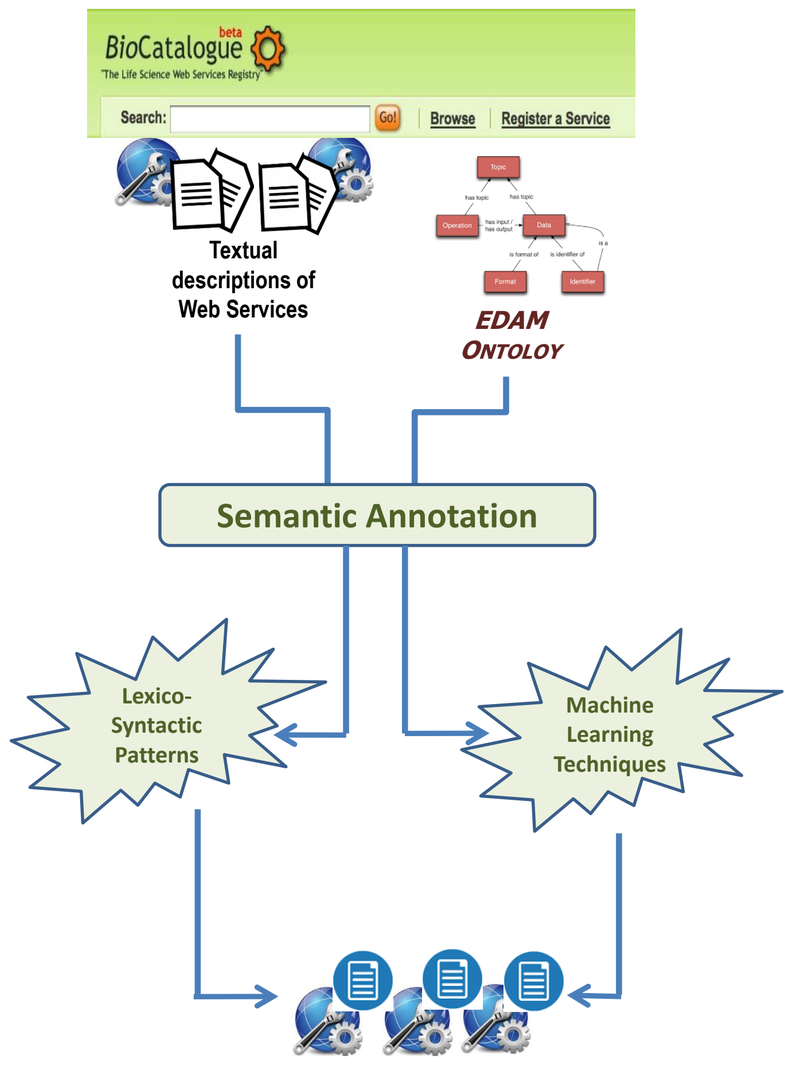
NLP Techniques and Ontologies for Web-based Learning Systems



An Ontology-based Model for Multiligual Learning Resources Indexing and Retrieving

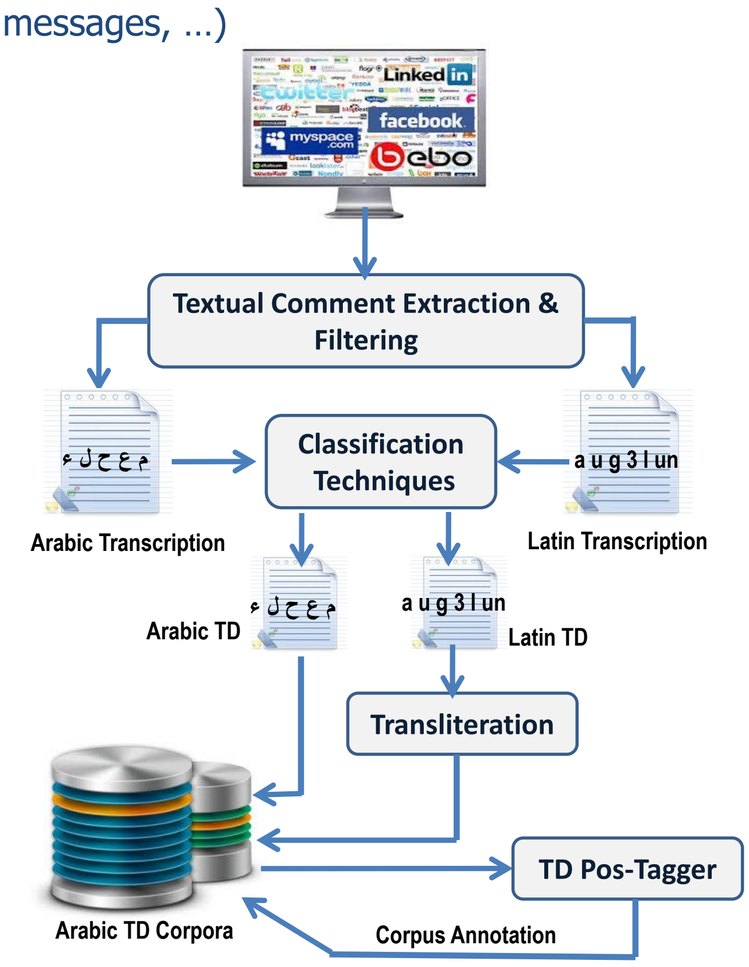
Bioinformatics

Semantic Annotation of BioInformatics Web Services



NLPIT for Tunisian Dialect Processing

NLPIT is **NLP for Informal Text** (textual posts on Social Media, blogs, instant messages, …)



Construction of Linguistic Resources & Tools for the Tunisian Dialect (TD) Processing