

KEYWORDS: Semantic indexing, Conceptual Information Retrieval, Natural Language Processing (NLP), Semantic measures, Knowledge map, Information extraction, Cognitive automation

OUR RESEARCH AIMS

- To search, analyse, structure and filter information in the light of knowledge models
- To enhance interaction and customisation
- To support cognitive automation: to automate certain high level cognitive tasks (learning and decision-making processes) and increase the reactivity and reliability of human operators

ACTIVITIES

Exploiting ontologies and designing innovative solutions for the semantic processing of information resources in decision-making processes:

- Knowledge Engineering
- Natural Language Processing
- Learning
- Assisted Decision-making

SPECIFIC FEATURES

- Use of ontologies to support interactivity and customisation: towards cognitive automation

FIELDS OF APPLICATION

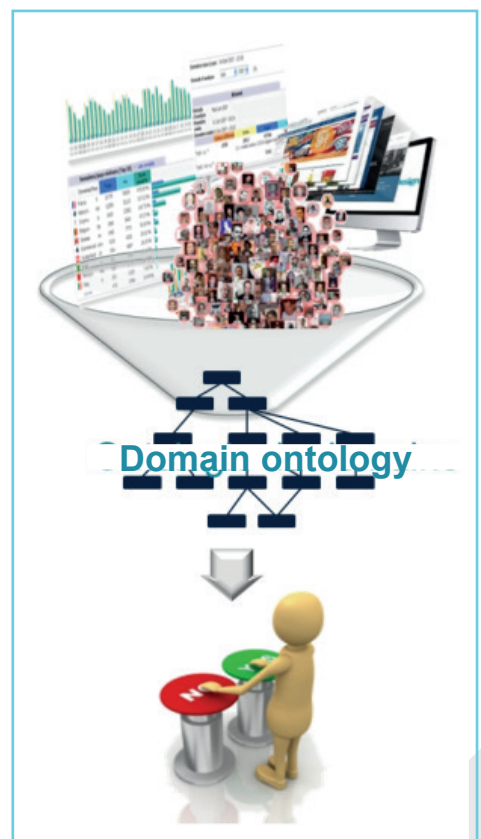
- Healthcare
- Social networks
- Professional training
- Law
- Multimedia
- Military training
- Fact-checking
- Semantic Web

SCIENTIFIC EXPERTISE

- Conceptual information retrieval
- Semantic measurements
- Information extraction
- Natural Language Processing
- Visualising via knowledge maps
- Information theory

RESEARCH PARTNERSHIPS

- Collaborative platforms with the AvieSan ITMO institutes: Cancer, Healthcare Technology, IHP (Immunology, Haematology, Pneumology)
- Partnerships with companies : EDotPlus, Solunéa, Nétia



*Processing information
in a decision-making process*



Photo credits: © IMT Mines Alès

IMPLEMENTATION

- Scientific expertise
- Collaborative research
- Software libraries
- Technical infrastructure
- Assisting company creation
- Providing services
- Feasibility studies
- Prototypes and proofs of concept



RECENT PROJECTS

« Down-regulation of AIMP2 reduced glycosyltransferase »

↓

- AIMP2-DX2 down-regulation reduce glycosyltransferase
- Neoplasm proteins down-regulation reduce glycosyltransferase
- Proteins down-regulation reduce enzymes

NLP for extracting knowledge

MUD – Multiple Uncertainty Detection

Natural Language Processing (NLP) in particular for extracting knowledge:

- Distributional models
- Segmentation
- Sentiment analysis
- Uncertainty management

Annotation suggestion

Indexing and semantic summary

USI – User-oriented Semantic Indexer

- Provide conceptual indexing for resources or groups of resources of different kinds: texts, images, sounds, people...

Aim: once indexed, resources can be analysed and grouped together to highlight common traits and detect weak signals in order to enhance the management of organisations or the analysis of documents. By reducing the cognitive load, it favours rapid decision-making.

Welcome to Obirs 2.0

Concept search:
application to healthcare

OBIRS – Ontology-Based Information Retrieval System

- arching for relevant resources on the basis of domain ontologies and semantic similarity measures
- Visualising via knowledge maps
- Relevance feedback for better customisation of results

Aim: this knowledge map provides an overall vision while conserving as much information as possible for rapid decision-making with full awareness of the situation.

OUR TECHNICAL RESOURCES

- 4 servers that can be clustered and virtualised, 500 Gb of RAM
- Graphics Processing Unit (GPU)
- SML : Semantic Measure Library <http://www.semantics-measures-library.org>
- calculation of distributional and conceptual measures
- optimisation for processing large volumes of data

- The IMT Mines Alès research centers
- C2MA Materials Research Center
 - LGEI Center of Industrial Environment and Industrial and Natural Risk
 - LGI2P Center of Computer and Production Engineering

You want to develop a project ?

Contact details

IMT Mines Alès – LGI2P
sylvie.ranwez@mines-ales.fr
<https://kidknowledge.wp.imt.fr>