

## Summary

PhD in Computer Science - Researcher in Artificial Intelligence (AI) - Associate Professor at Institut Mines Télécom, I'm a problem solving enthusiast studying both theoretical and practical aspects of complex AI problems, e.g. Approximate Reasoning, Knowledge Representation, Machine Learning, Natural Language Understanding. In addition to my theoretical work, I'm also actively collaborating with companies and startups for solving real-world problems using cutting-edge research technologies and theoretical tools. My research is applied, I'm constantly developing source code libraries / software, and defining data processing platforms for empirical experiments and transferring research results to Industrial partners. Since 2018, I'm the head of the AI & Data Science speciality at IMT Mines Alès Engineering school.

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## Experience

### IMT - Institut Mines Télécom

NÎMES, ALÈS, FRANCE

#### Associate Professor

Nov '16 – present

Teachings (mostly Engineering students at IMT Mines Alès but also Master students at Montpellier University): Knowledge representation (Description Logics), Semantic Web (RDF(S), SPARQL, OWL), Problem Solving, Artificial Intelligence, Machine Learning, Big Data (Hadoop, Spark), Programming (PHP, Java). ~ 160h/year.

Research: Approximate Reasoning, Knowledge Representation, Machine Learning, Natural Language Processing... see summary in the research section.

### Armines

NÎMES, FRANCE

#### Postdoc - Assistant Professor at IMT

May '14 – Nov '16

Contribution to data analysis driven by knowledge representations, semantic indexing, and information retrieval. Writing of the book *Semantic Similarity from Natural Language and Ontology Analysis*, volume 8. Morgan & Claypool Publishers, 2015 (254 pages). See above for the details of my teachings activities during that period.

### Engineering School - Ecole des mines d'Alès

NÎMES, FRANCE

#### PhD student - Lecturer

May '11 – May '14

Theoretical study and analysis of semantic measures (mainly semantic similarity measures) that can be used for comparing concepts structured into a poset; preparation of my thesis *Knowledge-based Semantic Measures: from Theory to Applications*. See above for teachings activities during that period (+ Graph Theory).

### CNRS - Institute of Evolutionary Sciences, University of Montpellier

MONTPELLIER, FRANCE

#### Engineer

May '9 – May '11

Algorithmic analysis and coding for DNA and RNA sequence alignment.

<http://bioweb.supagro.inra.fr/macse/>

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## Education

### Montpellier University

MONTPELLIER, FRANCE

#### PhD in Computer Science

2011 – 2014

#### Master in Computer Science

2009 – 2011

Please refer to my [LinkedIn profile](#) for a more complete list of work experiences.

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## Research

As a researcher in Artificial Intelligence, I'm studying how to improve Human/Machine collaborations for solving complex problems. To this aim, I'm studying and developing approximate reasoning techniques taking advantage of prior knowledge expressed into knowledge bases and text corpora. My contributions refer to the fields of *Knowledge Representation* (Description Log-

ics, Semantic Web) - to represent and to take advantage of formal knowledge expressions; *Natural Language Processing* - for extracting information or knowledge from texts; *Reasoning* - to exploit aforementioned knowledge and information for answering problems (e.g. for question answering, knowledge base population, knowledge discovery). To tackle these issues I'm often defining

and analysing *Algorithms*, studying the use/adaptation of *Machine Learning* techniques and dealing with big heterogeneous datasets (*Big Data*). Finally, I supervise several PhD and Master students, act as a reviewer for several conferences and journals, publish free open source tools/code, and collaborate with several (private) companies on these topics.

## Publications – selection

List of publications selected to provide a brief overview of my work with my collaborators in various AI fields.

*Please refer to my Google Scholar profile for a more complete list of publications.*

- Valentina Beretta, Sébastien Harispe, Sylvie Ranwez, and Isabelle Mougenot. Combining truth discovery and rdf knowledge bases to their mutual advantage. In *International Semantic Web Conference, ISWC 2018*, 2018
- Valentina Beretta, Sébastien Harispe, Sylvie Ranwez, and Isabelle Mougenot. Truth selection for truth discovery models exploiting ordering relationship among values. *Knowledge-Based Systems*, 2018
- Gildas Tagny Ngompe, Sébastien Harispe, Jacky Montmain, Guillaume Zambrano, and Stéphane Mussard. Detecting sections and entities in court decisions using hmm and crf graphical models. In *Advances in Knowledge Discovery and Management (AKDM 2018)*, 2018
- Nicolas Sutton-Charani, Abdelhak Imoussaten, Sébastien Harispe, and Jacky Montmain. Evidential bagging: Combining heterogeneous classifiers in the belief functions framework. In *Proceedings of the 19th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems (IPMU)*, 2018
- Cécile L'Héritier, Abdelhak Imoussaten, Sébastien Harispe, and Gilles Dusserre. Identifying criteria most influencing strategy performance: Application to humanitarian logistical strategy planning. In *Proceedings of the 19th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems (IPMU)*, 2018
- Stéphane Cariou, Mathilde Chaignaud, Massissilia Medjkoune, Sébastien Harispe, Jacky Montmain, and Jean-Louis Fanlo. Development of a method to evaluate odour quality based on non-expert analysis. In *CEST 2017, 15th International Conference on Environmental Science And Technology*, 2017
- Sébastien Harispe, Massissilia Medjkoune, and Jacky Montmain. Eliciting implicit evocations using word embeddings and knowledge representation. In *SUM 2017, 11th International Conference on Scalable Uncertainty Management*, pages 78–92, 2017
- Nicolas Fiorini, Sébastien Harispe, Sylvie Ranwez, Jacky Montmain, and Vincent Ranwez. Fast and reliable inference of semantic clusters. *Knowledge-Based Systems*, 111:133 – 143, 2016
- Sébastien Harispe, Massissilia Medjkoune, and Jacky Montmain. Summarizing conceptual descriptions using knowledge representations. In *2016 IEEE Symposium Series on Computational Intelligence (SSCI)*, pages 1–8, Dec 2016
- Valentina Beretta, Sébastien Harispe, Sylvie Ranwez, and Isabelle Mougenot. How can ontologies give you clue for truth-discovery? an exploratory study. In *Proceedings of the International Conference on Web Intelligence, Mining and Semantics (WIMS)*, 2016
- Valentina Beretta, Sébastien Harispe, Sylvie Ranwez, and Isabelle Mougenot. Knowledge base enrichment from text and ontological analysis: management of inconsistencies and trust strengthening. In *Advances on cognitive automation at LGI2P/Ecole des Mines d'Alès Doctoral research snapshot 2015-2016*, page 3, 2016
- Pierre-Antoine Jean, Sébastien Harispe, Sylvie Ranwez, Patrice Bellot, and Jacky Montmain. Uncertainty detection in natural language: a probabilistic model. In *Proceedings of the International Conference on Web Intelligence, Mining and Semantics (WIMS)*, 2016
- Massissilia Medjkoune, Sébastien Harispe, Jacky Montmain, Stéphane Cariou, Jean-Louis Fanlo, and Nicolas Fiorini. Towards a non-oriented approach for the evaluation of odor quality. In *Proceedings of the 17th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems (IPMU)*, 2016
- Sébastien Harispe, Abdelhak Imoussaten, François Troussel, and Jacky Montmain. On the consideration of a bring-to-mind model for computing the information content of concepts defined into ontologies. In *International Conference on Fuzzy Systems FUZZIEEE*, 2015

- Sébastien Harispe, Sylvie Ranwez, Stefan Janaqi, and Jacky Montmain. *Semantic Similarity from Natural Language and Ontology Analysis*, volume 8. Morgan & Claypool Publishers, 2015
- Nicolas Fiorini, Sylvie Ranwez, Sébastien Harispe, Jacky Montmain, and Vincent Ranwez. Usi at bioasq 2015: a semantic similarity-based approach for semantic indexing. In *Working Notes for the Conference and Labs of the Evaluation Forum (CLEF), Toulouse, France, 2015*
- Sébastien Harispe. *Knowledge-based Semantic Measures: from Theory to Applications*. PhD thesis, Université Montpellier 2, 2014
- Sébastien Harispe, David Sánchez, Sylvie Ranwez, Stefan Janaqi, and Jacky Montmain. A Framework for Unifying Ontology-based Semantic Similarity Measures: a Study in the Biomedical Domain. *Journal of Biomedical Informatics*, 48:38–53, 2014
- Sébastien Harispe, Sylvie Ranwez, Stefan Janaqi, and Jacky Montmain. The Semantic Measures Library and Toolkit: fast computation of semantic similarity and relatedness using biomedical ontologies. *Bioinformatics*, 30(5):740–742, 2014
- Stefan Janaqi, Sébastien Harispe, Sylvie Ranwez, and Jacky Montmain. Robust Selection of Domain-specific Semantic Similarity Measures from Uncertain Expertise. In *Proceedings of the 15th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems IPMU*, volume 444, pages 1–10, 2014
- Montserrat Batet, Sébastien Harispe, Sylvie Ranwez, David Sánchez, and Vincent Ranwez. An information theoretic approach to improve the semantic similarity assessment across multiple ontologies. *Information Sciences*, 283:197–210, 2014
- Sébastien Harispe, Sylvie Ranwez, Stefan Janaqi, and Jacky Montmain. Semantic Measures Based on RDF Projections: Application to Content-Based Recommendation Systems. In *On the Move to Meaningful Internet Systems: OTM 2013 Conferences*, pages 606–615, Graz (Austria), 2013. Springer Berlin Heidelberg
- Sébastien Harispe, Stefan Janaqi, Sylvie Ranwez, and Jacky Montmain. From Theoretical Framework to Generic Semantic Measures Library. In *Proceedings of the On the Move to Meaningful Internet Systems: OTM 2013 Workshops*, pages 739–742. Springer Berlin Heidelberg, 2013
- Vincent Ranwez, Sébastien Harispe, Frédéric Delsuc, and Emmanuel J. P. Douzery. MACSE : Multiple Alignment of Coding SEquences accounting for frameshifts and stop codons. *PLoS ONE*, 6(9):e22594, 2011

## Coding Project selection

Project leader and main developer of the Semantic Measures Library (SML). SML is a free, generic and open source Java library dedicated to the computation and analysis of semantic measures, e.g. semantic similarity, semantic relatedness, semantic distance, etc. Based on the SML we also develop the SML-Toolkit, a command line program which gives access to some of the functionalities of the library, e.g. to compute measure scores. website: <http://www.semantic-measures-library.org/sml/> (associated paper, see publications below).

*Please refer to my GitHub account for more projects.*

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## Supervising

### PhD students (official supervisions):

- Massissilia Medjkoune (2014-2017): Study of a non-oriented approach for the evaluation of odor quality - algorithmic contributions aiming at using knowledge representations, text analysis, semantic similarity/relatedness as well as semantic clustering techniques for data analysis related to odor quality evaluation.
- Pierre-Antoine Jean (2014-2017): Algorithmic contributions for (i) detecting uncertainty expressions in natural language, (ii) extracting information from text analysis, and (iii) exploiting uncertain extractions for knowledge discovery. Supervised machine learning, Natural Language Processing, Belief functions.
- Valentina Beretta (2015-2018): Algorithmic contributions incorporating the use of knowledge representations for estimating the trustworthiness of information sources as well as the confidence of their claims. Belief functions, iterative methods, probabilistic models, hierarchical classification.
- Gildas Tagny-Gnompe (2015-2018): Information extraction and semantic analysis applied to legal texts. Information extraction using supervised and semi-supervised approaches (using CRF), probabilistic model for text classification.

- Jean-Christophe Mensonides (2016-2019): Recurrent Neural Networks for text analysis. Information Extraction, text classification, word embeddings, unsupervised learning, language models.
- Cécile l'héritier (2016-2019): Mixing knowledge representation techniques and multicriteria analysis for crisis management. Knowledge representation, case-based reasoning, semantic similarity/relatedness estimation.

**Other students:** also supervising Master students, Engineer students, as well as a postdoc (Nader Jelassi).

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## Reviewing

I'm actively acting as a reviewer for several scientific conferences and journals, e.g. Information Sciences, Nature Communications, WIMS (International Conference on Web Intelligence, Mining and Semantics), SimBig (International Symposium on Information Management and Big Data), Oxford Bioinformatics, Applied Ontology... I'm also involved in conference organizations, e.g. we've hosted WIMS 2017 in our laboratory.

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## Skills

**Technical expertise:** Dev.: Java, Python, C++. Web technologies: HTML+CSS, XML, REST, JS, NodeJS, React. Semantic Web: RDF(S), OWL, SPARQL. Big Data: Hadoop, Spark

**Natural languages:** French (*mother tongue*), English.

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