

Personal Information

Sébastien Destercke

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Research profile

Most of my research focuses on reasoning under severe uncertainty, where by severe it is understood incomplete and imprecise information. I have in particular investigated theories using probability sets rather than single probabilities as models of such uncertainty. My work is shared between theoretical issues and more applied considerations.

Education

2017 **Habilitation** from Université de Technologie de Compiègne (UTC)

Title Musings on imprecision in uncertainty

2005-2008 **PhD** in Computer Science at Université Paul-Sabatier, Toulouse. Prepared at Toulouse Institute of Computer Science Research, under the supervision of Didier Dubois and funded by the French Institute for Radiological Protection and Nuclear Safety.

Title Uncertainty representation and combination: new results with application to nuclear safety issues

1998-2004 **Engineering degree (Msc level) in computer science**, Polytechnic faculty of Mons (selective faculty with entry exam), Belgium

Employment

11/11 - Now **CNRS (main French research institute) researcher** in the joint research unit Heudiasyc (Université de Technologie de Compiègne), recognized as a laboratory of excellence by the French government.

02/09 - 11/11 **Research engineer** at the French agronomical research institute for developing countries, within the joint research unit IATE working on agropolymers and emerging technologies, Montpellier, France.

09/08 - 02/09 **Teaching and research assistant** in the mathematics and computer science department, Université Toulouse le mirail, France

Research management and responsibilities

Projects

As principal investigator (5)

PreServe

Details 4 years (2019-2023), **PI**, ANR JCJC national grant (~270K Euros)

Topic Preference learning under severe uncertainty

Partners Heudiasyc/CNRS (France), LIP6 (France), Paderborn University (Germany)

PULP

Details 1 years (2018), **PI**, CNRS PEPS project (~16K Euros)

Topic ExPlanation, Uncertainty and Learning for Preferences

Partners Heudiasyc/CNRS (France), LIP6 (France), LGI (France)

UML-NET

Details 3 years (2015-2018), **PI**, ANR national grant (~50K Euros)

Topic Network on uncertainty in Machine Learning

Partners Heudiasyc/CNRS (France), EDyP/CNRS (France), Oviedo University (Spain), Paderborn University (Germany), Belfast university (Ireland), IDSIA research center (switzerland)

ORUs

Details 1 years (2013-2014), **PI**, Labex Grant (~8K Euros)

Topic Optimisation under uncertainty of complex system reliability

Partners Heudiasyc/CNRS (France)

EVEREST

Details 3 years (2013-2016), member then **PI**, ANR grant (~ 200K Euros)

Topic Learning High Level Representations of Large Sparse Tensors

Partners Heudiasyc/CNRS (France) & Xerox Research Center Europe (France).

As member (3)

KIVA

Details 4 years (2013-2017), task leader on gesture recognition, Picardie Region Industrilab project

Topic Gesture training in 3D virtual environment

Partners Montupet (France), Heudiasyc/CNRS (France), Reviattech (France)

RECIF

Details 3 years (2014-2017), task leader on expert elicitation, ANR national grant (~150K Euros)

Topic Uncertainty modelling by belief functions for railway systems reliability assessment

Partners Heudiasyc/CNRS (France), LAMIH (France), CRAN (France)

ECOBIOCAP

Details 4 years (2011-2015), member, FP7 European grant (~ 4M Euros)

Topic Ecoefficient Biodegradable Composite Advanced Packagings

Partners IVV (Germany), UCC (Ireland), SIK (Sweden), NBM (Spain), CSIC (Spain), INRA (France), FUERST-PLAST (France), FEDOU (France), ALTERBIO (France), UMINHO (Portugal), IBET (Portugal), UNIROMA (Italy), NOVAMONT (Italy), UNIBO (Italy), CBHU (Hungary)

Involvement in scientific societies

SIPTA **At-large member** of the International Society for Imprecise Probabilities: Theories and Applications (\simeq 100 members). Main society for promoting imprecise probabilistic approaches. Previously Web editor (2011-2013,2015-2017), Secretary (2013-2015) and President (2017-2019).

BFAS **Member (2019-2023), then secretary (2010-2017)** of the International Belief function association (\simeq 100 members). Main society for promoting belief functions.

GDR IA **Steering committee member** of the National Artificial Intelligence CNRS workgroup (\simeq 500 members). In charge of relation with other workgroups.

Main commissions of trust

2013 and 2015 **Steering committee member** of the International Symposium on Imprecise Probability Theories and Applications (**ISIPTA**) (\simeq 60 participants), in **2013** (Compiègne) and **2015** (Lugano). This is the main conference on imprecise probabilistic approaches.

2014-Now **Associate editor** of International Journal of Approximate Reasoning (IF:1.729), the main journal for imprecise probabilistic related papers

2016-Now **Associate Editor** of Artificial Intelligence Review (IF:3.814), a general journal focusing on artificial intelligence surveys

- 2010-Now **Program committee** of major and selective conferences about artificial intelligence, machine learning and uncertainty reasoning (as selective as top journals), such as
- International Conference on Artificial Intelligence and Statistics - AISTATS (since 2019, \simeq 30% accep.)
 - AAAI Conference on Artificial Intelligence - AAAI (since 2018, \simeq 24% accept.)
 - Conference on Neural Information Processing Systems - NIPS (Since 2018, \simeq 24% accept.)
 - International Conference on Machine Learning - ICML (since 2018, \simeq 25% accept.).
 - European Conference on Artificial Intelligence - ECAI (Since 2014, \simeq 25% accept.).
 - International Joint Conference on Artificial Intelligence - IJCAI (SPC since 2017, \simeq 25% accept.).
 - Uncertainty in Artificial Intelligence - UAI (since 2010, \simeq 25% accept.),
 - European Conference on Symbolic and Quantitive Approaches to Reasoning with Uncertainty- ECSQARU (Since 2011, \simeq 50% accept.),
- Program committee** of conferences having a strong focus on uncertainty theories such as
- Soft Methods in Probabilities and Statistics - SMPS (2012 - 2018 - 2020)
 - International Conference on Belief Functions - BELIEF (since 2012)
 - International Symposium on Imprecise Probabilities: Theories and Applications - ISIPTA (since 2009)
 - Information Processing and Management of Uncertainty - IPMU (since 2014)
 - IEEE International Conference on Fuzzy Systems - FUZZ'IEEE (since 2014)

- Thesis juries Participation to 16 thesis jury committees:
- 11 as external examiner (1 outside of France)
 - 5 as thesis reviewer (2 outside of France)

Expertise For French (ANR, RNTI), Swiss (SNF) and Dutch (NWO) national research agencies.

Recruitment Member of 5 maître de conférence selection committees

Teaching, formation and dissemination

Awards

- 2019 Best poster at the [ISIPTA 2019 conference](#), for "A Unifying Frame for Neighbourhood and Distortion Models" with I. Montes and E. Miranda
- 2016 Best paper at the [BELIEF 2016 conference](#), for "Idempotent Conjunctive Combination of Belief Functions by Distance Minimization" with J. Klein and O. Colot
- 2016 Best paper at the [SMPS 2016 conference](#), for "Technical Gestures Recognition by Set-Valued Hidden Markov Models with Prior Knowledge" with Y. Soullard and A. Antonucci
- 2009 **Best Ph.D.** (gold prize) awarded by [SIPTA](#), the international scientific society for imprecise probabilities (around 100 members). Highest PhD award in imprecise probabilities, about 5 candidates/year.
- 2008 Best paper award, [\$\lambda\mu\$ conference](#), category "new industrial challenges", for "Evaluation, analyse et synthèse de sources multiples d'information appliquées à des codes de calculs nucléaires" with E. Chojnacki

Visiting grants

- 2014 **Grey College Fellow** from Durham University, England. 3 months
 - 2012 **Excellency grant** from Oviedo University, Spain. 3 months
 - 2007 **Young researcher grant** from Paul-Sabatier to visit Ghent University. 3 months
- Others **Short invited** stays (1 week each time) at Oviedo University and Paderborn University

Invited talks and seminars

- 2019 **Plenary lecturer** at the [5th BFAS School](#) (Sienna, Italy): "Belief functions and boolean inference: basics, computational challenges and applications"

- 2018 **Plenary lecturer** at the [4th European Summer School on Fuzzy Logic and Applications](#) (Bari, Italy), a **major school on fuzzy/possibilistic approaches**: "Uncertainty modelling and processing with possibility theory" and "Elements of statistical learning with possibility theory"
- 2018 **Plenary lecturer** at the [8th SIPTA School on Imprecise Probabilities](#) (Oviedo, Spain), the **main summer school on imprecise probability theory**: "Belief functions"
- 2018 **Invited tutorial lecturer** at the [10th JFMS](#) (Bordeaux, France): "Decision making under uncertainty"
- 2017 **Plenary lecturer** at the [ETICS 2017 School](#) (Porquerolles, France): "Imprecise probabilities: why, when, how?"
- 2017 **Plenary lecturer** at the [4th BFAS School](#) (Xi'an, China), a particular IP approach : "Belief functions and uncertainty theories"
- 2017 **Plenary lecturer** at the [23th FJOH Summer School](#) (Karlsruhe, Germany): "Epistemic uncertainty propagation in risk/reliability analyses"
- 2015 **Plenary lecturer** at the [3rd BFAS School](#), the **main school on belief function theory** (Cucq, France): "On conflict and information fusion"
- 2013 **Invited tutorial lecturer** at the [12th ECSQARU](#) conference (Utrecht, Netherlands): "Uncertainty theories: an introduction"
- 2012 **Invited tutorial lecturer** at the [6th SUM conference](#) (Marburg, Germany): "Some of the things you wanted to know about uncertainty (and were too busy to ask)"

Local seminars 15 external invited seminars, 5 outside of France

Supervision of Graduate Students and post-doctoral fellows

Master 12 master students on average at 50% supervision, 1 in progress

PhD 6 co-supervised, 1 fully supervised. 4 defended:

- [Nicolas Sutton Charani](#), now lecturer in école des Mines d'Ales,
- [Vu-Linh Nguyen](#), now post-doctoral student at Paderborn University
- [Gen Yang](#), now data scientist at Kpler company
- Lanting Yu

Post-doctoral 4 at 100 % supervision, 1 at 50%, 1 in progress

Involvement in software development

[FisPro](#) Open source fuzzy inference system mainly developed by INRA and IRSTEA.

[SUNSET](#) IRSN software for uncertainty analysis and propagation

[Classifip](#) Open source Python library for machine learning with imprecise probabilities

[AgrUm](#) Open source library developed at Paris UPMC for manipulating graphical models

[@web](#) INRA Platform retrieving experimental data from electronic document

Publication record summary (see complete list for details)

Global summary

- Number of citations: 1393 (source: [google scholar](#)) - ranked third with keyword "imprecise probability"
- h-index: 20 (source: [google scholar](#))
- Total number of publications: 8 edited journal issues and books, 3 book chapters, 48 journal papers, 64 international peer-reviewed conferences