Curriculum Vitae

Michèle Sebag

Principal Researcher (DR1) C.N.R.S.
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2 children

Educational Background

1997	Habilitation à Diriger des Recherches, Université Paris-11 Orsay *Stochastic Heuristics for Machine Learning & Machine Learning for Stochastic Optimization*
1990	PhD, Université Paris-9 Dauphine, Maths and Decision, 1990 *A symbolic-numerical approach for supervised learning from examples and rules* Supervisors: Edwin Diday, Yves Kodratoff, Joseph Zarka
1983	Master Economics, Université Paris-10 Nanterre
1980	Agrégation of Mathematics
1978	Master Applied Maths, Université Paris-6 Pierre et Marie Curie
1975	Ecole Normale Supérieure (Sèvres), Maths

Professional Experience

	Research: Centre National de la Recherche Scientifique (C.N.R.S)
2001-	Senior scientist (DR1 C.N.R.S) since 2001 Head of the *Inference and Learning* group, Lab. of Computer Science, Université Paris-11 Orsay since 2003 co-founder of the TAO, *Thème Apprentissage & Optimisation* group, INRIA, Ile-de-France Saclay
1991-2001	Advanced junior scientist (CR1 C.N.R.S) co-Head of the *Inverse Problem and Optimisation* group, Lab. of Mechanics of Solids, Ecole Polytechnique
	Industry
1985-1987	Consulting Engineer in Computer Science (Machine learning and Stochastic optimization).
1982-1985	Senior engineer, Thomson-CSF (now Thales).
1980-1982	Engineer, Thomson-CSF.

Teaching

since 2010	Master module in Statistical Learning and Optimization (50 hours, with Francois Yvon);
since 2010	Master module in Advanced Learning and Applications (24 hours)
2003-2009	Master module in Statistical Learning and Data Mining (24 hours)
2010	Master module in Data Mining (Beyrut, 24 hours)
2006	Summer School in Ubiquitous Data Mining (Porto, 6 hours)
2001	Summer School in Statistical Learning (Udine, 8 hours)

Supervision

• Olivier Bousquet (2002, PhD Award of Ecole Polytechnique), now at Google Zurich
• Jérôme Maloberti (2004), Research engineer, CNRS Paris-7.
• Alexandre Termier (2005, co-supervised with Marie-Christine Rousset), Associate Pr, Univ. Grenoble
• Jérémie Mary (2005, co-supervised with Antoine Cornuéjols), Associate professor, Univ. Lille-III
• Sylvain Gelly (2007, co-supervised with Nicolas Bredèche; PhD Award Chancellerie des Universités; PhD Award runner-up Académie des Sciences), Google Zurich

• Nicolas Baskiotis (2008), Associate Pr., Univ. Paris-6.
• Cédric Hartland (2009, co-supervised with Nicolas Bredèche), Associate Pr. in EPITA.
• Xiangliang Zhang (2010, co-supervised with Cécile Germain, Outstanding Award from National China, Research Council for Abroad Students (20 in 2010 in France, all disciplines)), Research scientist, KAUST U. Saudi Arabia.
• Romaric Gaudel (2010), Associate Pr., Univ Lille-III.
• Philippe Rolet (2010) (co-supervised with Olivier Teytaud), Senior Engineer, start-up DigiMine.
• Alvaro Fialho (2010, co-supervised with Marc Schoenauer), Post-doc, Ecole Polytechnique.
• Ilya Loshchilov (2013, co-supervised with Marc Schoenauer), Post-doc, EPFL Lausanne.
• Wang Weijia (July. 2014), research engineer in Flight Automatic Control Research Institute (FACRI), China.
• Riad Akrour (Sept. 2014, co-supervised with Marc Schoenauer).

On-going: Nicolas Galichet, Yoann Isaac, Guohua Zhang, Basile Mayeur, Thomas Schmitt.

Prizes and honors

• ECCAI Fellow, 2010
• Winner of the Online Trading of Exploitation vs Exploration Challenge (as a team, 2006; NIPS 2006)
• Winner of the Predictive Toxicology Evaluation Challenge (as an individual, 1997; IJCAI 1999).
• Best Paper Award, PPSN 2014; LION 2009.

Steering Committees

• Board member of CHIST-ERA (*European Coordinated Research on Long-term Challenges in Information and Communication Sciences & Technologies ERA-Net*) since 2011.
• Member of the European Machine Learning and Knowledge Discovery from Databases Steering Committee since 2010.
• Member of the PASCAL Steering Committee (2005-2013); manager of the Challenge Programme (*Pattern Analysis, Statistical Modelling & Computational Learning*, 2003-2013, Network of Excellence).
• Member of the KD-Ubiq Management Board (2005-2008; Ubiquitous Knowledge Discovery Coordination Action).
• Board member of the CNRS Computer Science Council (INS2I), since 2011.
• President of the French Association for AI (2003-2010).

Memberships to Editorial Boards

• Editorial board, Machine Learning Journal (Springer Verlag, since 2001)
• Editorial board, Genetic Programming and Evolvable Hardware (Springer Verlag, since 2001)
• Action Editor for IEEE Trans. on Evolutionary Computation (1998-2003)
• Editorial board of Knowledge and Information Systems, Springer (2003-2008)

Organisation of International Conferences

• **Programme Chair**, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery from Databases (ECML PKDD, 3 volumes Springer Verlag LNCS), with Jose Balcazar, Francesco Bonchi and Aris Gionis (2010)
• **Programme Chair**, International Conference on Inductive Logic Programming (ILP, 1 volume Springer Verlag LNAI), with Céline Rouveirol (2001)
• **Tutorial chair** for Eur. Conf. on Artificial Intelligence (ECAI), with J. Lang, 2012; for ECML PKDD 2003.

• **Area Chair** for Int. Conf. on Machine Learning (ICML) 05, 08, 09, 11; ACM-Sigmod Knowledge Discovery from Database (KDD) 09; ECML PKDD 01 05 08; Eur. Conf. on Artificial Intelligence 08.
• PC Member of the main international conferences in Machine Learning, Data Mining and Evolutionary Computation: ICML, ECML PKDD, KDD, Int. Conf. on Data Mining (ICDM), ILP, Genetic and Evolutionary Computation Conference (GECCO), Parallel Problem Solving from Nature (PPSN)

Selected Publications

Sequential decision making in machine learning and optimization

•Self-adaptive surrogate-assisted covariance matrix adaptation evolution strategy. Ilya Loshchilov, Marc Schoenauer, Michele Sebag. Genetic and Evolutionary Computation Conference (GECCO) 2012: 321-328
•Feature Selection as a One-Player Game. Romaric Gaudel, Michele Sebag. Int. Conf. on Machine Learning (ICML) 2010 359-366
•Boosting Active Learning to Optimality: A Tractable Monte-Carlo, Billiard-Based Algorithm Philippe Rolet, Michele Sebag, Olivier Teytaud. Machine Learning and Knowledge Discovery in Databases (ECML PKDD) 2009: 302-317

Rewards for autonomous agents

•APRIL: Active Preference-learning based Reinforcement Learning. Riad Akrour; Marc Schoenauer; Michele Sebag. Machine Learning and Knowledge Discovery in Databases (ECML PKDD) 2012, Springer Verlag LNCS 7524, pp. 116-131.
•Sustainable cooperative coevolution with a multi-armed bandit. Francois-Michel De Rainville, Michele Sebag, Christian Gagné, Marc Schoenauer, Denis Laurendeau. Genetic and Evolutionary Computation Conference (GECCO) 2013: 1517-1524
•Open-Ended Evolutionary Robotics: An Information Theoretic Approach. Pierre Delarboulas, Marc Schoenauer, Michele Sebag. In Parallel Problem Solving from Nature 2010 Springer Verlag LNCS, p. 334-343

Algorithm/heuristic selection and hyper-parameter tuning

•Collaborative hyperparameter tuning. Remi Bardenet; Mathias Brendel; Balazs Kegl; Michele Sebag. Int. Conf. on Machine Learning (ICML) 2013, JMLR Workshop and Conference Proceedings, 28, pp. 199-207
•Bandit-based Search for Constraint Programming. Manuel Loth; Michele Sebag; Youssef Hamadi; Marc Schoenauer. Int. Conf. on Principles and Practice of Constraint Programming (CP) 2013, Springer Verlag LNCS 8124, pp. 464-480
•Extreme Value Based Adaptive Operator Selection. Alvaro Fialho, Luis Da Costa, Marc Schoenauer, and Michele Sebag. Parallel Problem Solving From Nature 2008, Springer Verlag, pages 175–184, 2008.

List of selected publications

• Editor [1, 2, 3, 4, 5]
• Journals papers [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27]
• Chapters [28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40]
• International Conferences (selection on full papers) [41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 18, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132]

References

[1] C. Rouveirol and M. Sebag (eds). *Special Issue on Inductive Logic Programming and Relational Learning, Machine Learning Journal*. Kluwer Academic Publishers, 2004.

[2] C. Rouveirol and M. Sebag (eds). *Proceedings of Eleventh International Conference on Inductive Logic Programming*. Springer Verlag, LNAI 2157, 2001.

[3] J. L. Balcázar, F. Bonchi, A. Gionis, and M. Sebag (eds). *Machine Learning and Knowledge Discovery in Databases (ECML PKDD), Part I*. Number 6322 in Lecture Notes in Computer Science. Springer Verlag, 2010.

[4] J. L. Balcázar, F. Bonchi, A. Gionis, and M. Sebag (eds). *Machine Learning and Knowledge Discovery in Databases (ECML PKDD), Part II*. Number 6323 in Lecture Notes in Computer Science. Springer Verlag, 2010.

[5] J. L. Balcázar, F. Bonchi, A. Gionis, and M. Sebag (eds). *Machine Learning and Knowledge Discovery in Databases (ECML PKDD), Part III*. Number 6324 in Lecture Notes in Computer Science. Springer Verlag, 2010.

[6] Cheng-Wei Chou, Ping-Chiang Chou, Jean-Joseph Christophe, Adrien Couëtoux, Pierre de Freminville, Nicolas Galichet, Chang-Shing Lee, Jialin Liu, David Lupien Saint-Pierre, Michèle Sebag, Olivier Teytaud, Mei-Hui Wang, Li-Wen Wu, and Shi-Jim Yen. Strategic choices in optimization. *J. Inf. Sci. Eng.*, 30(3):727–747, 2014.

[7] Weijia Wang and Michèle Sebag. Hypervolume indicator and dominance reward based multi-objective monte-carlo tree search. *Machine Learning*, 92(2-3):403–429, 2013.

[8] Xiangliang Zhang, Cyril Furtlehner, Cécile Germain-Renaud, and Michèle Sebag. Data stream clustering with affinity propagation. *IEEE Trans. Knowl. Data Eng.*, 26(7):1644–1656, 2014.

[9] Michèle Sebag. A tour of machine learning: An AI perspective. *AI Commun.*, 27(1):11–23, 2014.

[10] Sylvain Gelly, Levente Kocsis, Marc Schoenauer, Michèle Sebag, David Silver, Csaba Szepesvári, and Olivier Teytaud. The grand challenge of computer Go: Monte Carlo tree search and extensions. *Commun. ACM*, 55(3):106–113, 2012.

[11] Cédric Gouy-Pailler, Michèle Sebag, Anthony Larue, and Antoine Souloumiac. Single trial variability in brain-computer interfaces based on motor imagery: Learning in the presence of labeling noise. *Int. J. Imaging Systems and Technology*, 21(2):148–157, 2011.

[12] Tamás Éltetö, Cécile Germain-Renaud, Pascal Bondon, and Michèle Sebag. Towards non-stationary grid models. *J. Grid Comput.*, 9(4):423–440, 2011.

[13] C. Furtlehner, M. Sebag, and Z. Xiangliang. Scaling Analysis of Affinity Propagation. *Physical Review E: Statistical, Nonlinear, and Soft Matter Physics*, 81:066102, 2010. 14 pages, 11 figures.

[14] A. Fialho, L. Da Costa, M. Schoenauer, and M. Sebag. Analyzing bandit-based adaptive operator selection mechanisms. *Annals of Mathematics and Artificial Intelligence – Special Issue on Learning and Intelligent Optimization*, 60:25–64, September 2010.

[15] A. Cornuéjols and Michèle Sebag. A note on phase transition and computational pitfalls of learning from sequences. *Journal of Intelligent Information Systems*, 31(2):177–189, 2008.

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[18] J. Maloberti and M. Sebag. Fast theta-subumption with constraint satisfaction algorithms. *Machine Learning Journal*, 55:137–174, 2004.

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[30] L. Saitta and M. Sebag. *Encyclopedia of Machine Learning*, chapter Phase Transitions in Machine Learning, pages 767–773. Springer Verlag, 2010.

[31] Jorge Maturana, Alvaro Fialho, Fréderic Saubion, Marc Schoenauer, Fréderic Lardeux, and Michèle Sebag. *Autonomous Search*, chapter Adaptive Operator Selection and Management in Evolutionary Algorithms, pages 161–190. Springer Verlag, 2010.

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[35] M. Sebag. *Principles of non-parametric learning*, chapter Genetic Programming for Model Identification, pages 287–354. Springer Wien New-York, 2002.

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[42] R. Akrour, M. Schoenauer, M. Sebag, and J.-C. Souplet. Programming by feedback. In *ICML*, volume 32 of *JMLR Proceedings*, pages 1503–1511. JMLR.org, 2014.

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[45] Blaise Hanczar and Michèle Sebag. Combination of one-class support vector machines for classification with reject option. In Toon Calders, Floriana Esposito, Eyke Hüllermeier, and Rosa Meo, editors, *Machine Learning and Knowledge Discovery in Databases - European Conference, ECML PKDD 2014, Nancy, France, September 15-19, 2014. Proceedings, Part I*, volume 8724 of *Lecture Notes in Computer Science*, pages 547–562. Springer, 2014.

[46] Joel Ribeiro, Josep Carmona, Mustafa Misir, and Michèle Sebag. A recommender system for process discovery. In Shazia Wasim Sadiq, Pnina Soffer, and Hagen Völzer, editors, *Business Process Management - 12th International Conference, BPM 2014, Haifa, Israel, September 7-11, 2014. Proceedings*, volume 8659 of *Lecture Notes in Computer Science*, pages 67–83. Springer, 2014.

[47] Rémi Bardenet, Mátyás Brendel, Balazs Kegl, and Michele Sebag. Collaborative hyperparameter tuning. In *Int. Conf. on Machine Learning*, page to appear, 2013.

[48] Manuel Loth, Michele Sebag, Youssef Hamadi, and Marc Schoenauer. Bandit-based search for constraint programming. In *Constraint Programming (CP)*, page to appear. Springer-Verlag, 2013.

[49] Ilya Loshchilov, Marc Schoenauer, and Michèle Sebag. Intensive surrogate model exploitation in self-adaptive surrogate-assisted cma-es (saacm-es). In Christian Blum and Enrique Alba, editors, *Genetic and Evolutionary Computation Conference, ACM-GECCO*, pages 439–446. ACM-Press, 2013.

[50] François-Michel De Rainville, Michèle Sebag, Christian Gagné, Marc Schoenauer, and Denis Laurendeau. Sustainable cooperative coevolution with a multi-armed bandit. In Christian Blum and Enrique Alba, editors, *Genetic and Evolutionary Computation Conference, ACM-GECCO*, pages 1517–1524. ACM-Press, 2013.

[51] Manuel Loth, Youssef Hamadi, Christian Schulte, and Michele Sebag. Pilot, rollout and monte carlo tree search methods for job shop scheduling. In *LION'13*, page to appear. Springer-Verlag, 2013.

[52] Yoann Isaac, Quentin Barthelemy, Jamal Atif, Cédric Gouy-Pailler, and Michèle Sebag. Multi-dimensional sparse structured signal approximation using split bregman iterations. In *International Conference on Acoustics, Speech, and Signal Processing*, 2013.

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[76] Luis Da Costa, Alvaro Fialho, Marc Schoenauer, and Michèle Sebag. Adaptive Operator Selection with Dynamic Multi-Armed Bandits. In C. Ryan et al., editor, *Genetic and Evolutionary Computation Conference (GECCO)*, pages 913–920. ACM, ACM Press, 2008.

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