

Curriculum Vitae et Studiorum

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Research topics

I am a postdoc researcher at the Université Libre de Bruxelles, affiliated with the Group for research on Ethnic Relations, Migration and Equality (GERME, Institute of Sociology), and the Machine Learning Group (MLG, Department of Computer Science). My current research interests include dynamic social network analysis, complex systems, collective behavior, social capital, migration, multiculturalism and inequalities.

I work with Dirk Jacobs (GERME) and Tom Lenaerts (MLG) on the PRFB project "Network dynamics of social capital", funded by Innoviris (Brussels Capital Region). We focus on ethnic social capital, and use advanced agent-based generative models to explain the structure and dynamics of inter-organizational networks (interlocking directorates) among ethnic organizations, using comparative data relative to different European capitals, and different immigrant communities. In the longer term, we intend to study the interplay among characteristics of such networks, the social capital of the corresponding communities, and the policies of the host nations.

My background is mostly on machine learning and computer science: I graduated in Electronic Engineering at the University of Genova (Italy) in 2002, with a research thesis related to information theory and Bayesian learning. I performed my doctoral research at IDSIA (Lugano, Switzerland), defending a thesis on algorithm portfolios, online learning, and survival analysis, at the University of Lugano (2010). During my PhD, I also visited IRIDIA (ULB), and cooperated with the Statistics Institute of Université catholique de Louvain (2008). I came back to Brussels in 2010, for a postdoc at the Computational Modeling lab (now AI Lab) of Vrije Universiteit Brussel (VUB), on multi-agent reinforcement learning.

Research activity and education

April 2012 - present: Researcher at Université Libre de Bruxelles (ULB), affiliated with the Group for research on Ethnic Relations, Migration and Equality (GERME, Inst. of Sociology), and the Machine Learning Group (MLG, Dept. of Computer Science).

Research topics: complex dynamic networks, longitudinal/multilevel data analysis, social networks, (ethnic) social capital.

Project: *Network Dynamics of Social Capital*[†].

Funding: Innovlris (Brussels Institute for Research and Innovation), Belgium.

April 2010 - March 2012: Postdoc researcher at the Computational Modeling Lab (CoMo), Dept. of Informatics, Vrije Universiteit Brussel, cooperating with Ann Nowé.

Research topics: single and multi-agent reinforcement learning, game theory.

Project: *Learning Control for Production Machines (LeCoPro)*.

Funding: agentschap voor Innovatie door Wetenschap en Technologie (IWT), Belgium.

Jan 2006 - 24 March 2010: PhD in Informatics at the University of Lugano (USI).

Supervisor: Jürgen Schmidhuber.

Thesis title: Online Dynamic Algorithm Portfolios.

Jun 2008 - May 2009: Visiting researcher at IRIDIA, Université Libre de Bruxelles, cooperating with M. Birattari, T. Stützle (IRIDIA), I. van Keilegom, C. Legrand (Statistics Institute, UCL, Louvain-la-Neuve).

Research topics: optimization, algorithm performance modeling, survival analysis.

Project: *Survival Analysis Methods for Optimisation Algorithm Selection**

Funding: Swiss National Science Foundation (SNF), grant for prospective researchers.

Sep 2002 - March 2010: Doctoral researcher at IDSIA, Lugano, Switzerland.

Supervisor: Jürgen Schmidhuber.

Research topics: algorithm (portfolio) selection, restart strategies, algorithmic complexity, algorithm performance modeling, survival analysis, bandit problems, reinforcement learning, evolutionary computation, recurrent neural networks.

Jun 2007 - May 2008: Project: *Distributed Algorithm Portfolios**. Funding: Hasler Foundation, Switzerland.

Sep 2004 - Aug 2006: Project: *General methods for Search and Kolmogorov Complexity*[†]. Funding: SNF, Switzerland.

Sep 2002 - Aug 2004: Project: *General methods for Search and Reinforcement Learning*. Funding: SNF, Switzerland.

Jul 2002: *Laurea* (MS equiv.) in Electronic Engineering, University of Genoa (Italy).

Grade: 110/110, with publication dignity.

Supervisor: Davide Anguita (DIBE).

Thesis title: MDL Based Model Selection for Relevance Vector Regression.

Course topics: machine learning, information theory, operations research, control theory, digital signal processing, software engineering, telematics, cryptography.

* Authored, and [†] co-authored project proposals.

Referee and organization activities

- Journals: Neural Networks, IEEE Tr. on Neural Networks (and Learning Systems), Constraints, J. of AI Research, J. of Heuristics, AMAI, Neural Computation, ACM Computing Surveys, AI Magazine.
- Conferences: IJCNN, GECCO, SAB, SOAVE, ISDA, ICIEA, IEEE SSCI, WSC.
- PC: ISDA 2007/8, SLS-DS 2009, MEDES 2010, AGI 2011, GECCO 2011/2 (ACO-SI Track), NIPS 2011/2 Ws. on Bayesian Optimization, BNAIC 2011/2.
- Organization: Real world applications of Reinforcement Learning (IJCNN 2012 Special Session).
- Memberships: International Network for Social Network Analysis.
IEEE Adaptive Dynamic Programming and Reinforcement Learning TC.

Teaching and mentoring activities

- 2010-2011: Supervision of Master thesis “Improving wet-clutch engagement using Reinforcement Learning”. K. Van Vaerenbergh, Dept. of Informatics, VUB.
Promoter: Ann Nowé.
- 2007: TA for Master course “Intelligent Systems”, USI, Lugano (CH).
- 2006: TA for 3rd year courses “Algoritmi e numerica” and “Programmazione e Linguaggi”, SUPSI, Lugano (CH).

Publications in Social Sciences

- Gagliolo, M., Lenaerts, T., Jacobs, D., A comparative analysis of the dynamics of interlocks among immigrant organizations. Abstract accepted at *XXXIII Sunbelt, Social Networks Conference of the International Network for Social Network Analysis (INSNA)*, May 2013, Hamburg, Germany. <http://hamburg-sunbelt2013.org/>
- Gagliolo, M., Lenaerts, T., Jacobs, D., Network Dynamics of Social Capital. Abstract presented at the *2nd Belgian Social Network Research Event*, University of Antwerp, September 2012. <http://www.ua.ac.be/sna>

Main publications in Computer Science

Journals

- Gagliolo, M., Schmidhuber, J., Algorithm Portfolio Selection as a Bandit Problem with Unbounded Losses. *Annals of Math. and Artif. Intell.*, 61(2):49–86, 2011.
- Gagliolo, M., Universal Search. *Scholarpedia*, 2(11):2575, 2007.
- Schmidhuber, J., Wierstra, D., Gagliolo, M., Gomez, F., Training recurrent neural networks by Evolino. *Neural Computation*, 19(3):757–779, 2007.

- Gagliolo, M., Schmidhuber, J., Learning dynamic algorithm portfolios. *Annals of Mathematics and Artificial Intelligence*, 47(3–4), 2006.

Invited book chapters

- Gagliolo, M., Legrand, C., Algorithm Survival Analysis. In T. Bartz-Beielstein et al., eds., *Empirical Methods for the Analysis of Optimization Algorithms*, Springer, 2010, pp. 159–182.

Conference proceedings

- Van Vaerenbergh, K., Rodriguez, A., Gagliolo, M., Vrancx, P., Nowé, A., Stoev, J., Goossens, S., Pinte, G., and Symens, W., Improving wet clutch engagement with reinforcement learning. *IJCNN 2012*, IEEE, 2012, pp. 1–8.
- Gagliolo, M., Van Vaerenbergh, K., Rodriguez, A., Nowé, A., Goossens, S., Pinte, G., and Symens, W., Policy search reinforcement learning for automatic wet clutch engagement. *ICSTCC 2011*, IEEE, 2011, pp. 250–255.
- Pinte, G., Stoev, J., Symens, W., Dutta, A., Zhong, Y., Wyns, B., De Keyser, R., Depraetere, B., Swevers, J., Gagliolo, M., and Nowé, A., Learning strategies for wet clutch control. *ICSTCC 2011*, IEEE, 2011, pp. 467–474.
- Goossens, S., Pinte, G., Symens, W., Gagliolo, M., Rodriguez, A., and Nowé, A., Reinforcement learning for repetitive systems with discrete sensors. *30th Benelux Meeting on Systems and Control*, Universiteit Gent, 2011, p. 149.
- Gagliolo, M., Schmidhuber, J., Algorithm Selection as a Bandit Problem with Unbounded Losses. *LION 4*, Springer LNCS, 2010, vol. 6073, pp. 82–96.
- Gagliolo, M., Legrand, C., Birattari, M., Mixed-Effects Modeling of Optimisation Algorithm Performance. *SLS 2009*, Springer LNCS, 2009, vol. 5752, pp. 150–154.
- Gagliolo, M., Schmidhuber, J., Towards Distributed Algorithm Portfolios. *DCAI 2008*, Springer ASC, 2008, vol. 50, pp. 634–643.
- Gagliolo, M., Schmidhuber, J., Learning restart strategies. *IJCAI 2007*, AAAI Press, 2007, pp. 792–797.
- Gagliolo, M., Schmidhuber, J., Impact of censored sampling on the performance of restart strategies. *CP 2006*, Springer LNCS, 2006, vol. 4204, pp. 167–181.
- Schmidhuber, J., Gagliolo, M., Wierstra, D., Gomez, F., Evolino for Recurrent Support Vector Machines. *ESANN 2006*, d-side, pp. 593–598.
- Gagliolo, M., Schmidhuber, J., A Neural Network Model for Inter-Problem Adaptive Online Time Allocation. *ICANN 2005*, Springer LNCS, 2005, vol. 3697, pp. 7–12.
- Gagliolo, M., Zhumatiy, V., Schmidhuber, J., Adaptive Online Time Allocation to Search Algorithms. *ECML 2004*, Springer LNCS, 2004, vol. 3201, pp. 134–143.
- Anguita, D., Gagliolo, M., MDL Based Model Selection for Relevance Vector Regression. *ICANN 2002*, Springer LNCS, 2002, vol. 2415, pp. 468–473.

Attended seminars and courses

- *5th European meeting on Python in Science, EuroSciPy*. ULB, Brussels, August 2012.
<http://www.euroscipy.org/conference/euroscipy2012>
- *Advanced Social Network Analysis II - Influence Mechanisms & Longitudinal Network Analysis*. Filip Agneessens (University of Groningen), Essex Summer School in Social Science Data Analysis, University of Essex, Colchester, UK, August 2012.
<http://www.essex.ac.uk/summerschool/courses/session3/3k.html>
- *Multilevel Social Networks Symposium*. J. Koskinen, A. Lomi, T. Snijders, M. Tranmer, *et al.*, MNMG, University of Manchester, Manchester, UK, July 2012.
<http://mnmg.co.uk/MNMGConference.html>
- *Time for Causality. Causal inference and dynamic decisions in longitudinal studies*. O. Aalen, P. Dawid, J. Robins, A. Rotnitzky, *et al.*, SuSTaln, School of Mathematics, University of Bristol, Bristol, UK, April 2012.
<http://www.sustain.bris.ac.uk/ws-causality/index.html>
- *Complex Systems Summer School*. L. Bradley, D. Krakauer, C. Moore, M. Newman, *et al.*, Santa Fe Institute, Santa Fe (NM), USA, June 2011.
http://tuvalu.santafe.edu/events/workshops/index.php/Complex_Systems_Summer_School_2011
- *Novelty detection and extreme value analysis*. David Clifton (Oxford Univ.) and Johan Segers (UCL). UCL, Louvain-la-Neuve, Belgium, December 2010.
http://sites.uclouvain.be/doctoralschool-cil/event_description.php?w=142
- *Evolution of cooperation - Models and theories*. R. Boyd, D. Fudenberg, H. Gintis, M. Nowak, *et al.*, IIASA, Vienna (Austria), September 2009.
<http://webarchive.iiasa.ac.at/Research/EEP/TECT/>
- *Advances in multi-arm bandits and sequential decision making*. N. Cesa-Bianchi, M. Ebden, E. Gelenbe, R. Munos, *et al.*, Imperial College, London, UK, March 2009.
<http://www2.imperial.ac.uk/~nadams/March09Workshop/>
- *Competing risks: a practical perspective*. Melania Pintilie (UHN, Canada). UCL, Brussels, September 2008.
- *Distributed computing*. Fernando Pedone, USI, 2006.
- *Distributed Systems*. Leslie Lamport (Microsoft). USI, April 2006.

Language skills

Deep knowledge of C++/C, MATLAB, Python, R, \LaTeX , BASH Shell, GNU/Linux.
Elements of Java, PHP, HTML, Fortran, Prolog, Pascal, Perl, Lisp.
Mother tongue Italian. Fluent English. Intermediate French (B1). Basic Dutch (A1).

Last updated: January 2013