

**Personal situation:** 43 years old, 1 child (born in 2019).

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## Current situation

**Full professor** of Computer science at Aix-Marseille University (AMU), member of:

- the Laboratory of Computer and System Sciences (LIS, AMU-CNRS lab.); and
- the Department of Computer Science of the Faculty of Science of AMU.

## Education and Diplomas

**2012** Habilitation in computer science of Évry University (UEVE). Title: *On the bio-informatics of automata networks*. Jury: Alexander Bockmayr (president), Franck Delaplace (examiner), Alain Denise (reviewer), Enrico Formenti (reviewer), and Erol Gelenbe (reviewer). Defence: 2012/11/27.

**2008** PhD thesis in computer science of Grenoble University, jointly appointed by ÉNS-Lyon. Title: *Influence of boundary conditions in threshold Boolean automata networks and application to biology*. Jury: Arndt Benecke (examiner), Gilles Bernot (reviewer), Jacques Demongeot (thesis supervisor), Eric Goles (reviewer), Michel Morvan (thesis co-supervisor), Maurice Tchuente (examiner), Denis Thieffry (president), and René Thomas (invited). Defence: 2008/10/15.

**2005** Master of science in computer science of ÉNS-Lyon, under the supervision of Michel Morvan.

## Professional Activities

[01/2024;12/2028] Head of the LIS.

[09/2022;12/2023] Member of the Scientific Council and of the Academic Council of AMU.

[09/2013;...] Full professor at AMU.

[09/2013;12/2021] Founder and head of the Natural computation research team (CANA) at LIF (that became LIS in January 2018).

[09/2016;08/2019] Member of the French National Committee for Scientific Research (CoNRS section 6).

[07/2016;11/2018] Member of the Steering Committee of the *Turing Centre for living systems* (CENTURI).

[09/2014;08/2018] Head of the undergraduate studies (Licence) in computer science at AMU.

[01/2012;11/2012] Membre of the Scientific Council of UEVE.

[09/2009;08/2013] Associate professor at UEVE, member:

- of the Laboratory of Computer Science, Bioinformatics and Complex Systems (IBISC, UEVE lab.); and
- of the Department of Computer Science of UEVE.

[09/2008;08/2009] Assistant professor at the Telecommunication department at INSA-Lyon.

[09/2005;08/2008] PhD Candidate at Grenoble University and ÉNS-Lyon.

## Publications

### International editions

2. Enrico Formenti, Sylvain Sené, Guillaume Theyssier. Current Trends in Cellular Automata and Automata Networks. Special issue of *Natural Computing*, vol. 22(3), 2023, Springer.  
doi:10.1007/s11047-023-09952-3
1. Enrico Formenti, Sylvain Sené. Automata Networks and Their Applications. Special issue of *Natural Computing*, vol. 19(1), 2020, Springer.  
doi:10.1007/s11047-019-09780-4

### International book chapters

2. Loïc Paulevé, Sylvain Sené. Boolean networks and their dynamics: the impact of updates. *Systems biology modelling and analysis: formal bioinformatics methods and tools*, 173-250, Wiley, 2022.  
doi:10.1002/9781119716600.ch6

1. Jacques Demongeot, Tarek Melliti, Mathilde Noual, Damien Regnault, Sylvain Sené. On Boolean automata isolated cycles and tangential double-cycles dynamics. *Automata and Complexity*, Springer Series on Emergence, Complexity, Computation, 42: 145-178, Springer, 2022.  
doi:10.1007/978-3-030-92551-2\_11

### International journals

15. Pierre Siegel, Andrei Doncescu, Vincent Risch, Sylvain Sené. Representation of gene regulation networks by hypothesis logic based Boolean systems. *Journal of Supercomputing*, 79: 4556-4581, 2023.  
doi:10.1007/s11227-022-04809-5
14. Kévin Perrot, Pacôme Perrotin, Sylvain Sené. On Boolean automata networks (de)composition. *Fundamenta Informaticæ*, 181: 163-188, 2021.  
doi:10.3233/FI-2021-2055
13. Eric Goles, Fabiola Lobos, Gonzalo A. Ruz, Sylvain Sené. Attractor landscapes in Boolean networks with firing memory. *Natural Computing*, 19: 295-319, 2020.  
doi:10.1007/s11047-020-09789-0
12. Jacques Demongeot, Sylvain Sené. About block-parallel Boolean networks: a position paper. *Natural Computing*, 19: 5-13, 2020.  
doi:10.1007/s11047-019-09779-x
11. Jacques Demongeot, Sylvain Sené. Phase transitions in stochastic non-linear threshold Boolean automata networks on  $\mathbb{Z}^2$ : the boundary impact. *Advances in Applied Mathematics*, 98: 77-99, 2018.  
doi:10.1016/j.aam.2018.03.003
10. Mathilde Noual, Sylvain Sené. Synchronism vs. asynchronism in monotonic Boolean automata networks. *Natural Computing*, 17: 393-402, 2018.  
doi:10.1007/s11047-016-9608-8
9. Mathilde Noual, Damien Regnault, Sylvain Sené. About non-monotony in Boolean automata networks. *Theoretical Computer Science*, 504: 12-25, 2013.  
doi:10.1016/j.tcs.2012.05.034
8. Jacques Demongeot, Mathilde Noual, Sylvain Sené. Combinatorics of Boolean automata circuits dynamics. *Discrete Applied Mathematics*, 160: 398-415, 2012.  
doi:10.1016/j.dam.2011.11.005
7. Jacques Demongeot, Adrien Elena, Mathilde Noual, Sylvain Sené, Florence Thuderoz. “Immunetworks”, intersecting circuits and dynamics. *Journal of Theoretical Biology*, 280: 16-33, 2011.  
doi:10.1016/j.jtbi.2011.03.023
6. Jacques Demongeot, Eric Goles, Michel Morvan, Mathilde Noual, Sylvain Sené. Attraction basins as gauges of the robustness against boundary conditions in biological complex systems. *PLoS One*, 5: e11793, 2010.  
doi:10.1371/journal.pone.0011793
5. Jacques Demongeot, Emmanuel Drouet, Adrien Elena, Andres Moreira, Yassine Rechoum, Sylvain Sené. Micro-RNAs: viral genome and robustness of gene expression in the host. *Philosophical Transactions of the Royal Society A*, 367: 4941-4965, 2009.  
doi:10.1098/rsta.2009.0176
4. Jacques Demongeot, Hedi Ben Amor, Adrien Elena, Pierre Gillois, Mathilde Noual, Sylvain Sené. Robustness in regulatory interaction networks. A generic approach with applications at different levels: physiologic, metabolic and genetic. *International Journal of Molecular Sciences*, 10: 4437-4473, 2009.  
doi:10.3390/ijms10104437
3. Jacques Demongeot, Sylvain Sené. Boundary conditions and phase transitions in neural networks. Simulation results. *Neural Networks*, 21: 962-970, 2008.  
doi:10.1016/j.neunet.2008.04.003
2. Jacques Demongeot, Christelle Jézéquel, Sylvain Sené. Boundary conditions and phase transitions in neural networks. Theoretical results. *Neural Networks*, 21: 971-979, 2008.  
doi:10.1016/j.neunet.2008.04.005
1. Jacques Demongeot, Adrien Elena, Sylvain Sené. Robustness in regulatory networks: a multi-disciplinary approach. *Acta Biotheoretica*, 56: 27-49, 2008.  
doi:10.1007/s10441-008-9029-x

### International communications

30. Kévin Perrot, Sylvain Sené, Léah Tapin. Complexity of Boolean automata networks under block-parallel update modes. Proceedings of SAND’2024, LIPIcs 292, 19:1-19:19, Schloss Dagstuhl Publishing, 2024.  
doi:10.4230/LIPIcs.SAND.2024.19

29. Isabel Donoso Leiva, Eric Goles, Martín Ríos-Wilson, Sylvain Sené. Asymptotic (a)synchronism sensitivity and complexity of elementary cellular automata. Proceedings of LATIN'2024, LNCS 14579, 272-286, Springer, 2024. doi:10.1007/978-3-031-55601-2\_18
28. Kévin Perrot, Sylvain Sené, Léah Tapin. Combinatorics of block-parallel automata networks. Proceedings of SOFSEM'2024, LNCS 14519, 442-455, Springer, 2024. doi:10.1007/978-3-031-52113-3\_31
27. Pacôme Perrotin, Sylvain Sené. Turning block-sequential automata networks into smaller parallel networks with isomorphic limit dynamics. Proceedings of CiE'2023, LNCS 13967, 214-228, Springer, 2023. doi:10.1007/978-3-031-36978-0\_18
26. Pierre Siegel, Andrei Doncescu, Vincent Risch, Sylvain Sené. Representation of Boolean genetic regulatory networks by hypothesis logic. Proceedings of BIOCAMP'2021, Transactions on Computational Science and Computational Intelligence, Springer, 2021. To appear. document
25. Loïc Paulevé, Sylvain Sené. Non-deterministic updates of Boolean networks. Proceedings of AUTOMATA'2021, OASICS 90, 10:1-10:16, Schloss Dagstuhl Publishing, 2021. doi:10.4230/OASICS.AUTOMATA.2021.10
24. Kévin Perrot, Pacôme Perrotin, Sylvain Sené. Optimising attractor computation in Boolean automata networks. Proceedings of LATA'2021, LNCS 12638, 68-80, Springer, 2021. doi:10.1007/978-3-030-68195-1\_6
23. Florian Bridoux, Caroline Gaze-Maillet, Kévin Perrot, Sylvain Sené. Complexity of limit-cycle problems in Boolean networks. Proceedings of SOFSEM'2021, LNCS 12607, 135-146, Springer, 2021. doi:10.1007/978-3-030-67731-2\_10
22. Kévin Perrot, Pacôme Perrotin, Sylvain Sené. On the complexity of acyclic modules in automata networks. Proceedings of TAMC'2020, LNCS 12337, 168-180, Springer, 2020. doi:10.1007/978-3-030-59267-7\_15
21. Kévin Perrot, Sylvain Sené, Lucas Venturini. #P-completeness of counting update digraphs, cacti, and series-parallel decomposition method. Proceedings of CiE'2020, LNCS 12098, 326-338, Springer, 2020. doi:10.1007/978-3-030-51466-2\_30
20. Pierre Siegel, Andrei Doncescu, Vincent Risch, Sylvain Sené. Towards a Boolean dynamical system representation into a monotononic modal logic. Proceedings of NMR'2018, 53-62, 2018. document
19. Kévin Perrot, Pacôme Perrotin, Sylvain Sené. A framework for (de)composing with Boolean automata networks. Proceedings of MCU'2018, LNCS 10881, 121-136, Springer, 2018. doi:10.1007/978-3-319-92402-1\_7
18. Gonzalo A. Ruz, Eric Goles, Sylvain Sené. Reconstruction of Boolean regulatory models of flower development exploiting an evolution strategy. Proceedings of CEC'2018, 1-8, IEEE Press, 2018. doi:10.1109/CEC.2018.8477964
17. Florian Bridoux, Pierre Guillon, Kévin Perrot, Sylvain Sené, Guillaume Theyssier. On the cost of simulating a parallel Boolean automata network by a block-sequential one. Proceedings of TAMC'2017, LNCS 10185, 112-128, Springer, 2017. doi:10.1007/978-3-319-55911-7\_9
16. Tarek Melliti, Damien Regnault, Adrien Richard, Sylvain Sené. Asynchronous simulation of Boolean networks by monotone Boolean networks. Proceedings of ACRI'2016, LNCS 9863, 182-191, Springer, 2016. doi:10.1007/978-3-319-44365-2\_18
15. Aurore Alcolei, Kévin Perrot, Sylvain Sené. On the flora of asynchronous locally non-monotonic Boolean automata networks. Proceedings of SASB'2015, ENTCS 326, 3-25, Elsevier, 2016. doi:10.1016/j.entcs.2016.09.016
14. Tarek Melliti, Mathilde Noual, Damien Regnault, Sylvain Sené, Jérémy Sobieraj. Asynchronous dynamics of Boolean automata double-cycles. Proceedings of UCNC'2015, LNCS 9252, 250-262, Springer, 2015. doi:10.1007/978-3-319-21819-9\_19
13. Tarek Melliti, Damien Regnault, Adrien Richard, Sylvain Sené. On the convergence of Boolean automata networks without negative cycles. Proceedings of AUTOMATA'2013, LNCS 8155, 124-138, Springer, 2013. doi:10.1007/978-3-642-40867-0\_9
12. Mathilde Noual, Sylvain Sené. Sensitivity to synchronism of Boolean automata networks. Local Proceedings of CiE'2013, 2013. document
11. Franck Delaplace, Hanna Klaudel, Tarek Melliti, Sylvain Sené. Analysis of modular organisation of interaction networks based on asymptotic dynamics. Proceedings of CMSB'2012, LNCS 7605, 148-165, Springer, 2012. doi:10.1007/978-3-642-33636-2\_10

10. Mathilde Noual, Damien Regnault, Sylvain Sené. Boolean networks synchronism sensitivity and XOR circulant networks convergence time. Proceedings of AUTOMATA & JAC'2012, EPTCS 90, 37-52, Open Publishing Association, 2012.  
doi:10.4204/EPTCS.90.4
9. Sylvain Sené. A necessary condition for boundary sensitivity of attractive non-linear stochastic cellular automata in  $\mathbb{Z}^2$ . Proceedings (exploratory papers) of AUTOMATA & JAC'2012, 1-10, I3S/RR-2012-04-FR, 2012.  
document
8. Jacques Demongeot, Sylvain Sené. The singular power of the environment on stochastic nonlinear threshold Boolean automata networks. Proceedings of CMSB'2011, 55-64, ACM Press, 2011.  
doi:https://doi.org/10.1145/2037509.2037518
7. Jacques Demongeot, Adrien Elena, Mathilde Noual, Sylvain Sené. Random Boolean networks and attractors of their intersecting circuits. Proceedings of WAINA'2011, 483-487, IEEE Press, 2011.  
doi:10.1109/WAINA.2011.154
6. Jacques Demongeot, Mathilde Noual, Sylvain Sené. On the number of attractors of positive and negative Boolean automata circuits. Proceedings of WAINA'2010, 782-789, IEEE Press, 2010.  
doi:10.1109/WAINA.2010.141
5. Jacques Demongeot, Eric Goles, Sylvain Sené. Loss of linearity and symmetrisation in regulatory networks. Proceedings of WAINA'2009, 908-913, IEEE Press, 2009.  
doi:10.1109/WAINA.2010.141
4. Hedi Ben Amor, Jacques Demongeot, Sylvain Sené. Structural sensitivity of neural and genetic networks. Proceedings of MICAI'2008, LNCS 5317, 973-986, Springer, 2008.  
doi:10.1007/978-3-540-88636-5\_92
3. Jacques Demongeot, Michel Morvan, Sylvain Sené. Robustness of dynamical systems attraction basins against state perturbations: theoretical protocol and application in systems biology. Proceedings of CISIS'2008, 675-681, IEEE Press, 2008.  
doi:10.1109/CISIS.2008.23
2. Jacques Demongeot, Michel Morvan, Sylvain Sené. Impact of fixed boundary conditions on the basins of attraction in the flower's morphogenesis of *Arabidopsis thaliana*. Proceedings of AINAW'2008, 782-789, IEEE Press, 2008.  
doi:10.1109/WAINA.2008.68
1. Michel Morvan, Sylvain Sené. A distributed trust diffusion protocol for ad hoc networks. Proceedings of ICWMC'2006, 87-92, IEEE Press, 2006.  
doi:10.1109/ICWMC.2006.3

### National editions

1. Nazim Fatès, Sylvain Sené. Automates cellulaires et réseaux d'automates : le rôle central de l'irrégularité. Special issue of *Technique et Science Informatiques*, Lavoisier, vol. 34/4, 2015.  
document

### National book chapters

1. Georgia Barlovatz-Meimon, Sylvain Sené. Méthodes informatiques en biologie. Chapter 14 of *Culture de cellules animales, 3rd ed.*, Lavoisier, 2014.  
document

### National journals

2. Kévin Perrot, Sylvain Sené. Les réseaux d'automates booléens au cœur du calcul naturel. *1024 – Bulletin de la Société informatique de France*, 20: 171-182, 2022.  
doi:10.48556/SIF.1024.20.171
1. Tarek Melliti, Mathilde Noual, Damien Regnault, Sylvain Sené. Cycles, double-cycles d'interactions et modes de mise à jour. *Technique et Science Informatiques*, 34: 401-430, 2015.  
document

### National communications

3. Pierre Siegel, Andrei Doncescu, Vincent Risch, Sylvain Sené. Modal hypothesis logic, Boolean dynamical systems and genetic networks. Proceedings of JIAF'2020, 43-53, 2020.  
document
2. Pierre Siegel, Andrei Doncescu, Vincent Risch, Sylvain Sené. Représentation des systèmes dynamiques discrets booléens en logique des hypothèses. Proceedings of JIAF'2017, 1-14, 2017.  
document

1. Jacques Demongeot, Michel Morvan, Sylvain Sené. Fixed boundaries influence in biological networks: from theory to application. Proceedings of JOBIM'2008, 111-116, 2008.  
document

## Theses

3. Sylvain Sené. *Sur la bio-informatique des réseaux d'automates*. Habilitation thesis, Université d'Évry - Val d'Essonne, 2012.  
document
2. Sylvain Sené. *Influence des conditions de bord dans les réseaux d'automates booléens à seuil et application à la biologie*. Ph.D. thesis, UJF Grenoble and ÉNS-Lyon, 2008.  
document
1. Sylvain Sené. *Modèle de diffusion de la confiance pour les réseaux ad hoc*. M.Sc. thesis, École normale supérieure de Lyon, 2005.  
document

## Supervision

### Postdocs:

- ◇ 2019-2021 (21 months): Guilhem Gamard. Themes: automata networks, computability theory, complexity theory. He is an Associate Professor at the University of Lorraine.
- ◇ 2016-2017 (12 months): Timothée Jolivet. Themes: symbolic dynamics, computability theory, fractal geometry, tilings. Timothée Jolivet has decided to quit the academic world to focus on music.
- ◇ 2014 (6 months): Pierre-Étienne Meunier. Themes: automata networks and self-assembly. He is the CSO of Aldebo Énergie.

### PhDs:

- ◇ 2023-...: Isabel Donoso Leiva (Universidad Adolfo Ibañez & AMU). Title: *Dynamics and complexity of unconventional cellular automata*. International joint PhD thesis. Co-supervised with E. Goles and M. Ríos Wilson (Chilean side).
- ◇ 2022-...: Léah Tapin (AMU). Title : *Mises à jour complexes de réseaux d'automates*. Co-supervised with K. Perrot.
- ◇ 2018-2021 (38 months): Martín Ríos Wilson (Universidad de Chile & AMU). Title: *On automata networks dynamics: an approach based on computational complexity theory*. International joint PhD thesis. Co-supervised with E. Goles and Alejandro Maass (Chilean side), and G. Theyssier (French side). PhD defended the 31th of May 2021. M. Ríos Wilson currently is an Assistant Professor at Universidad Adolfo Ibañez.
- ◇ 2017-2021 (40 months): Pacôme Perrotin (AMU). Title: *Simulation entre modèles de calcul naturel et modularité des réseaux d'automates*. Co-supervised with K. Perrot. PhD defended the 12th of January 2021. P. Perrotin is a postdoc at the Univ. Mackenzie in Brazil, and is still applying for a lasting academic position.
- ◇ 2016-2019 (33 months): Florian Bridoux (AMU). Title: *Simulations intrinsèques et complexités dans les réseaux d'automates*. Co-supervised with G. Theyssier and A. Richard. PhD defended the 15th of July 2019. F. Bridoux currently is an Assistant Professor at the I3S of the University of Nice.
- ◇ 2009-2012 (32 months): Mathilde Noual (ÉNS-Lyon). Title: *Updating automata networks*. Co-supervised with Éric Rémila. PhD defended the 22nd of June 2012. M. Noual has been rewarded by the **price 2012 of the best PhD thesis in Computer science of the EADS Foundation** and the **2nd price Gilles Kahn 2012** of the French Computer science Society (SIF) sponsored by the French Academy of Sciences. After a 7-years stay at the Freie Universität Berlin as a research fellow, she is currently developing the project Mutual mutable matrix as a research engineer at CEA.

### Research internships:

- ◇ 2021-2022: Léah Tapin (AMU). Title: *Automata network periodic dynamics*. Co-supervised with K. Perrot. M.Sc. in computer science and discrete mathematics.
- ◇ 2020-2021: Lucas Venturini (ÉNS-Lyon). Title: *Automata cycle periodic dynamics*. Co-supervised with K. Perrot. Long research project in theoretical computer science (ÉNS 4th year).
- ◇ 2018-2019: Caroline Gaze-Maillet (AMU). Title: *Complexity of limit cycles in automata networks*. Co-supervised with K. Perrot. M.Sc. in theoretical computer science.
- ◇ 2018-2019: Lucas Venturini (ÉNS-Lyon). Title: *Synchronism sensitivity in Boolean automata networks*. Co-supervised with K. Perrot. M.Sc. in theoretical computer science.

- ◇ 2016-2017: Pacôme Perrotin (AMU). Title: *A compositional approach of Boolean networks*. Co-supervised with K. Perrot. M.Sc. in theoretical computer science.
- ◇ 2016-2017: Talia Lacombe (AMU). Title: *About bounds on the asymptotic dynamics of the parallel symmetric sand pile model*. Co-supervised with K. Perrot. M.Sc. in theoretical computer science.
- ◇ 2015-2016: Florian Bridoux (Univ. Orléans). Title: *On intrinsic simulations in Boolean automata networks*. Co-supervised with P. Guillon et K. Perrot. M.Sc. in theoretical computer science.
- ◇ 2015-2016: Talia Lacombe (AMU). Title: *Around the parallel symmetric sand pile model*. Co-supervised with K. Perrot. M.Sc. (1st year) in computer science.
- ◇ 2014-2015: Aurore Alcolei (ÉNS-Lyon). Title: *On the flora of asynchronous Boolean automata networks*. Co-supervised with K. Perrot. M.Sc. in theoretical computer science.
- ◇ 2014-2015: Julien Vallet (AMU). Title: *Ultimate periodicity properties of cyclic Chip firing games*. Co-supervised with K. Perrot. B.Sc. in computer science.
- ◇ 2013-2014: Michaël Blanc (AMU). Title: *Characterisation of a classe of exponentially converging Boolean networks*. Co-supervised with A. Richard. M.Sc. in theoretical computer science.
- ◇ 2012-2013: Jérémy Sobieraj (UEVE). Title: *Isomorphisms et cycle intersections in asynchronous Boolean automata networks*. Co-supervised with T. Melliti and D. Regnault. B.Sc. in computer science.
- ◇ 2011-2012: Victor Verhille (ENSIIE). Title: *Synchronous dynamics importances in the study of non-monotonic Boolean automata networks*. Co-supervised with D. Regnault. B.Sc. in computer science.
- ◇ 2011-2012: Romain Glandier (UEVE). Title: *Modelling of complex networks based on the study of the micro-environment of cancerous cells*. Co-supervised with Michel Malo. B.Sc. in bio-informatics.
- ◇ 2010-2011: Thomas Chassagne (UEVE). Title: *Semantic study of AI-SETNET networks*. Co-supervised with H. Klaudel. B.Sc. in mathematics and computer science.
- ◇ 2010-2011: Florian Rabin (ENSIIE). Title: *About k-xor circulant circuits*. Co-supervised with D. Regnault. B.Sc. in computer science.

## Courses

Only courses given at AMU, at École centrale de Marseille (ÉCM) and at UEVE are presented in the table below. Before 2009, I gave courses of Mathematics and (essentially) Computer science at UJF-Grenoble, ENSIMAG and INSA-Lyon.

AMU			
Levels	Domains	‡ students	Courses
L1	Computer sc.	150	Introduction to computer science
L2	Computer sc.	50	Finite automata, C programming & system
L3	Computer sc.	35	Advanced algorithms and graph theory, Compilers, Upgrading
M2(R)	Computer sc./Maths	10	Computation models and dynamical systems, Natural computation models
	Bio-informatics	10	Object programming
ÉCM			
Levels	Domains	‡ students	Courses
M1	Bio-engineering	15	Bio-informatics
UEVE			
Levels	Domains	‡ students	Courses
L1	Computer sc.	150	C programming & system, Computer science introduction
	Bio-informatics	30	Caml programming
L2	Computer sc.	35	Advanced C programming & system
L3	Computer sc.	15	Compilers, Algorithmics
	Bio-informatics	15	Biological modelling
M1	Computer sc.	10	Modelling and simulation
	Bio-informatics	15	Discrete dynamical systems, databases
M2(R)	Computer sc.	10	Unconventional computation models
	<i>Systems biology</i>	15	<i>Formal languages and modelling</i>
M2(P)	Bio-informatics	15	Advanced modelling

\* Number of hours per year:

2009-10: 278	2016-17: 228	2023-24: 192
2010-11: 233,5	2017-18: 192	2024-25( $\sim \frac{1}{2}$ sabbatical): 98,5
2011-12 ( $\sim \frac{1}{2}$ sabbatical): 109,5	2018-19: 192	
2012-13: 195	2019-20: 192	
2013-14: 203	2020-21: 192	
2014-15: 227	2021-22: 192	
2015-16: 233	2022-23: 198	

## Collective Responsibilities

### Organisation committee

- 2021: AUTOMATA & WAN (Marseille, France).
- 2017: Annual meeting of the CNRS SDA2 Group (Marseille, France).
- 2017: Francophone workshop on Boolean network theory (Marseille, France).
- 2016: Thematic days of the CNRS Bioss Group on Metabolism (Lille, France).
- 2016: Annual meeting of the Bioss Group (Lyon, France).
- 2015: Annual meeting of the Bioss Group (Paris, France).
- 2015: Workshop Bioss associated with CMSB'2015 (Nantes, France).
- 2015: Thematic days of the Bioss group on Reduction methods for discrete models (Marseille, France).
- 2014: Francophone workshop on Boolean network theory (Nice, France).
- 2013: IEEE International Conference on Networking, Sensing and Control (Évry, France).
- 2013: Ad hoc working group on the convergence on Boolean automata networks (Sallanches, France).
- 2012: Ad hoc working group on general Boolean network theory (Névache, France).

### CNRS

- 2016-2019 Elected member of French National Committee for Scientific Research in Computer Science.

### Aix-Marseille University

- 2024-...: Expert of the thematic group “Digital-TIC” of the Mission Europe for Research (MER) – AMU, CNRS, INSERM, IRD.
- 2024-... : Member of the doctoral school council dedicated to mathematics and computer science.
- 2023: Member of the selection committee of the grants for scientific culture projects.
- 2022-2024: Member of the Academic Council.
- 2022-2024: Elected member of the Scientific council.
- 2021: President of the carrier advancement ad hoc committee in Mathematics and Computer Science, in charge of the research activities evaluation.
- 2016-2018: Elected member of the Computer Science Department Council.
- 2016: Member of the selection committee of external professors in Computer Science.
- 2014-2018: Member of the selection committee of assistant professors in Computer Science.
- 2014-2018: Member of the Licence management team of the Faculty of Sciences.
- 2014-2018: Responsible for the undergraduate studies in Computer Science ( $\sim 700$  students).
- 2013-2014: Responsible for the 3rd year Licence (L3) in Computer Science at Saint-Charles ( $\sim 35$  students).

### LIS

- 2024-2028: Head of the laboratory.
- 2018-2021: Member of the “Computation” Department Council.
- 2018-2021: Head of the Natural Computation research team.

### CENTURI

- 2016-2018: Member of the Steering Committee, in charge of the computer science discipline.

### LIF

- 2015-2018: Member of the Laboratory Council.
- 2014-2016: Responsible for the organisation and the animation of the LIF seminars.
- 2013-2018: Member of the Executive Board of the lab.
- 2013-2018: Founder and head of the Natural Computation research team.

2013-2018: LIF Referee for the “Health and Life Sciences” interdisciplinary research pole of AMU.

### University of Evry

2012-2013: Elected member of the Scientific Council of the University.

2009-2013: Responsible for the 3rd year Licence (L3) in computer science.

2009-2013: Member of the selection committee of assistant professors in computer science.

### IBISC

2012-2013: Alternate member of the Scientific Board.

2010-2013: Responsible for the organisation and the animation of the seminary.

## Standing

### Editorial board of scientific journals

2016 *Complexity*, Wiley – Hindawi (resignation in January 2017 following recurring conflicts with Hindawi).

### Program committees

- ◊ IJTCS-FAW : *International Joint Conference on Theoretical Computer Science — Frontiers of Algorithmic Wisdom* (2025).
- ◊ ASCAT : *Asian Symposium on Cellular Automata Technology* (2025).
- ◊ WAN (chair): *Workshop on Automata Networks* (2021).
- ◊ IWBN: *International Workshop on Boolean Networks* (2020).
- ◊ BioRegul: CNRS Thematic school on Biological Network Modelling (2016, 2019).
- ◊ BIOTECHNO: *International Conference on Bioinformatics, Biocomputational Systems and Biotechnologies* (2013-2016).
- ◊ ICNSC: *International Conference on Networking, Sensing and Control* (2013).
- ◊ SASB: *International Workshop on Static Analysis and Systems Biology* (2015, associated with SAS).
- ◊ SynBioCCC: *Workshop on Synthetic Biology for Computation, Control and Communication* (2011, associated with ECAL).

### Main communications as an invited speaker

2024/07 : Workshop *Complex systems* at CMM/UAI, Viña del Mar, Chile.

2023/06: BioRegul: CNRS Thematic school on biological network modelling, Porquerolles, France.

2021/06: LACL seminary, Créteil, France.

2019/11: Conference at Univ. Afolfo Ibañez, Santiago, Chile.

2019/06: BioRegul: CNRS Thematic school on biological network modelling, Porquerolles, France.

2018/03: Workshop *Discrete Models of Complex Systems*, Orléans, France.

2017/06: XXXVIIth Congress of the SFBT (French-speaking Society of Theoretical Biology), Poitiers, France.

2016/07: National meeting of CNRS group SDA2, Lyon, France.

2016/06: BioRegul: CNRS Thematic school on biological network modelling, Porquerolles, France.

2015/11: School *Millenium Nucleus Models of Crisis*, Viña del Mar, Chile.

2015/11: Presentation at Univ. Afolfo Ibañez, Santiago, Chile.

2014/11 : Workshop *Théorie des réseaux booléens et ses applications en biologie*, Nice, France.

2013/11: TAGp 2013, *Theoretical Approaches for the Genome and the proteins*, Annecy-le-Vieux, France.

2013/06: CIBB 2013 (plenary), *Computational Intelligence methods for Bioinformatics and Biostatistics*, Nice, France.

2013/06: PCA 2013, *Probabilistic Cellular Automata*, Eindhoven, Netherlands.

11/2011 : DI-ENS seminary, Paris, France.

05/2011 : XXXIth Congress of the SFBT, Autrans, France.

04/2011 : Workshop *Formalisme logique, apports et défis pour la modélisation de réseaux de régulation biologique*, Rabat, Morocco.

08/2010 : Workshop *Around Boolean Networks*, Santiago, Chile.

03/2009 : IRCCyN seminary, Nantes, France.

04/2008 : ISNB 2008, *International Symposium on Networks in Bioinformatics*, Amsterdam, Pays-Bas.

### Scientific group memberships

- ◊ Co-founder (2015) with Anne Siegel and co-head (2015-17) of the Bioss (Symbolic Systems Biology) group, sub-group of the CNRS GDR IM and BiM.



- ◇ Member of the CNRS GDR IM (SDA2 & Bioss groups), of the GDR BiM (Bioss group), of the GDR STIC-Santé, of the National network on complex systems (RNSC), of the French-speaking Society on Theoretical Biology and of Computability in Europe (CiE).

### Thesis jury

- 2024/10: Examiner of the Ph.D. thesis of Aymeric Picard Marchetto from Nice Univ.
- 2024/06: Examiner of the Ph.D. thesis of Pablo Concha from Adolfo Ibañez Univ. and AMU.
- 2023/12: President of the Ph.D. thesis of Shahrzad Heydarshahi from Orléans Univ.
- 2022/11: Examiner of the Ph.D. thesis of Sara Riva from Nice Univ.
- 2022/09: President of the jury of the Ph.D. thesis from Nathanaël Eon at AMU.
- 2022/02: Reviewer of the Ph.D. thesis of Jérémie Pardo from Évry Univ.
- 2020/12: Reviewer of the Ph.D. thesis of Timothée Aubourg from Grenoble Alpes Univ.
- 2018/11: Reviewer of the Ph.D. thesis of Célia Biane- Fourati from Évry Univ.
- 2018/11: Reviewer of the Ph.D. thesis of Diego Maldonado from Orléans Univ.
- 2017/12: Reviewer of the Ph.D. thesis of Emna Ben Abdallah from École centrale Nantes.
- 2015/12: Reviewer of the Ph.D. thesis of Hana Hazgui from Grenoble Univ.
- 2015/09: Reviewer of the Ph.D. thesis of Nicolas Mobilia from Grenoble Univ.
- 2015/07: Reviewer of the Ph.D. thesis of Arnaud Poret from Lyon Univ.
- 2012/12: Examiner of the Ph.D. thesis of Ajitha Supiramanian from Évry Univ.

### Habilitation (or equivalent) jury

- 2020/09: Reviewer of the habilitation of Loïc Paulevé at Paris Saclay Univ.
- 2019/10: Examiner of the habilitation of Pascal Vanier at Créteil Univ.

### Selection committees participation

- 2024: Chair of Junior Professor in *computer science and mathematics for society* at AMU.
- 2024: Jean Morlet Chair CIRM/I2M 2026.
- 2024: Associate Professor in *computer graphics and applied geometry* at AMU.
- 2024: Associate Professor in *information retrieval and natural language processing* at AMU.
- 2017-2019: CNRS Junior & Senior researchers in computer science (all competitions).
- 2019: Associate Professor in *artificial intelligence* at ENSIMAG.
- 2019: CNRS competitive examination 51/04 as an external expert of the Interdisciplinary Committee 51.
- 2018: Associate Professor in *theoretical computer science* at Aix-Marseille Univ. (President of the committee)
- 2017: Associate Professor in *computer science* at Évry Univ.
- 2015: Full Professor recruitment at the Computer Science Department of Rutgers Univ. – Camden, New Jersey, USA.
- 2015: Associate Professor in *bioinformatics or distributed computing* at Paris Sud Univ.
- 2014: Associate Professor in *computational biology* at INSA-Lyon.
- 2014: Associate Professor in *theoretical computer science* at Aix-Marseille Univ.
- 2012: Associate Professor in *bio-informatics* at École centrale de Nantes (CNRS chair).
- 2012: Associate Professor in *discrete models for complex systems* at Nice Univ.
- 2011: Associate Professor in *bio-informatics* at Nice Univ.

### Scientific expertise

- ◇ 2018: Member of the HCERES committee of the computer science laboratory (LIPN) of Univ. Paris 13.
- ◇ 2015, 2017 and 2019: Reviewer for the call for projects FONDECYT (*Fondo Nacional de Desarrollo Científico y Tecnológico*) of the CONICYT (*Comisión Nacional de Investigación Científica y Tecnológica*), the Chilean equivalent of French ANR projects.
- ◇ 2012 and 2013: Reviewer for PEPS projects in Biology-Mathematics-Computer science (CNRS, INRIA, INSERM).
- ◇ Regular evaluations of articles:
  - Journals: *Advances in Applied Mathematics*, *Automatica*, *BMC Bioinformatics*, *BMC Systems Biology*, *Bulletin of Mathematical Biology*, *Chaos, Solitons & Fractals*, *Computation*, *Comptes Rendus de l'Académie des Sciences – Biologies*, *Discrete Applied Mathematics*, *Entropy*, *Information*, *Information Sciences*, *Jour-*

*Journal of Complex Networks, Journal of Complex Systems, Journal of Computational and Applied Mathematics, Journal of Computer Systems and Sciences, Journal of Theoretical Biology, Journal of The Royal Society Interface, Mathematics, Natural Computing, Qualitative Theory of Dynamical Systems, Royal Society Open Science, SIAM Journal on Applied Dynamical Systems, Theoretical Computer Science;*  
 – Conferences: ACRI, ANB, AUTOMATA, BIOTECHNO, ICNSC, IFAC, JAC, MFCS, MNTS, PetriNets, STACS, Solstice;  
 – *Workshops*: BioPPN, SASB, SynBioCCC.

### Research stays

2024/07: One month at CMM and Adolfo Ibañez Univ. in the context of EU MSCA ACANCOS project.  
 2019/11: Two weeks at Adolfo Ibañez Univ. in the context of ECOS ANIpad project.  
 2015/11: Two weeks at Adolfo Ibañez Univ. and at the Center for Mathematical Modelling of Santiago (Chile), invited by Eric Goles.  
 2012/05: Two weeks at I3S (Univ. Nice), invited by Jean-Paul Comet and Adrien Richard.  
 2010/08: One month at Adolfo Ibañez Univ. of Santiago (Chile), invited by Eric Goles.  
 2008/01: Two weeks at the Complex Systems Institute of Valparaiso (Chile), invited by Eric Goles.  
 2007/01: Two weeks at the Complex Systems Institute of Valparaiso (Chile), invited by Eric Goles.

### Scientific vulgarisation

2019/05: Conference entitled *Le calcul naturel au service des sciences de la vie, et vice-versa !*, at the thematic school MPCII (Mathematics-Physics-Chemistry-Informatics) “Sciences and Health”, Marseille.  
 → <https://sciencesetsante.sciencesconf.org>  
 2015/12: Conference entitled *De la nature du calcul au calcul naturel*, at the 13 minutes Marseille 2015, a vulgarisation event like TEDX, Marseille.  
 → <https://treize.lis-lab.fr>

## Projects and Awards

- [2024;2027] AMU local coordinator (and workpackage leader) of *ACANCOS* (EU MSCA SE 101131549).  
 Coordinator: Alberto Dennunzio.  
 Partners: Univ. Milan Bicocca (Italy), AMU, CNRS, Univ. Trieste (Italy), Univ. Turku (Finland), Univ. Presbiteriana Mackenzie (Brazil), Centro de modelamiento matemático (Chile).  
 Budget: €437,000.
- [2023;2024] Member of *CAMA* (STIC AmSud 22-STIC-02).  
 Coordinator: Guillaume Theyssier.  
 Partners: AMU (I2M, LIS), UCA (I3S), Univ. Presbiteriana Mackenzie (Brazil), Univ. Adolfo Ibañez (Chile).  
 Budget: €20,000.
- [2019;2021] Member of *SyDySy* (ECOS-Sud C19E02).  
 Coordinator: Guillaume Theyssier.  
 Partners: CNRS (I2M, LIS), Univ. Concepción (Chile).  
 Budget: €30,000.
- [2019;2023] Coordinator of *FANs* (ANR JCJC ANR-18-CE40-0002).  
 Partner: AMU (LIS).  
 Award amount: €190,000.
- [2017;2019] French coordinator of *ANIpad* (ECOS C16E01).  
 Partners: AMU (LIF/LIS), Univ. Adolfo Ibañez (Chile).  
 Budget: €30,000.
- [2017;2025] Member of *CenTuri* (ANR Convergences ANR-16-CONV-0001), in charge of the computer science discipline until the end of 2018.  
 Coordinator: Thomas Lecuit.  
 Partners: AMU (IBDM, CIML, INMED, I2M, LIF/LIS, CPT, CINAM, Fresnel, IRPHé, IUSTI, LAI, Bio-AFM, TAGC, M2P2, CIPHE).  
 Award amount: €21,300,000.
- [2015;2017] Coordinator of *Fri* (PACA APEX 2015.01134).  
 Partners: AMU (LIF, I2M), Univ. Nice (I3S).  
 Award amount: €48,000.
- [2011;2014] Member of *Synbiotic* (ANR Blanc ANR-10-BLAN-0307).  
 Coordinator: Franck Delaplace.  
 Partners: Univ. Évry (IBISC), Univ. Paris Est Créteil (LACL), ISC-PIF.

Award amount: €540,000.

**[2011;2012]** Coordinator of *Météding* (RNSC AI11-L03908).

Partners: Univ. Évry (IBISC), ÉNS-Lyon (LIP), Univ. Paris 7 (LIAFA).

Award amount: €4,000.

**[2010;2012]** Coordinator of *Maajes* (IXXI AP).

Partners: ÉNS-Lyon (LIP), Univ. Évry (IBISC), Univ. Grenoble (TIMC-IMAG), Univ. Nice (I3S).

Award amount: €5,000.

**[2007;2010]** Member of *Morphex* (EU FP6 NEST 043322).

Coordinator: Michel Morvan. Partners: CNRS (LIP), Univ. Amsterdam (Netherlands), Univ. Chalmers (Sweden), Instituto de sistemas complejos (Chile), UJG Mayence (Germany), Univ. Stuttgart (Germany), École polytechnique, OSLO.

Award amount: €2,230,000.

**[2006;2008]** Member of *Carpvirtuel* (ANR Blanc ANR-05-BLAN-0280).

Coordinator: Jan Traas.

Partners: ÉNS-Lyon (RDP, LIP), INRIA (Virtual Plants), Univ. Grenoble (TIMC-IMAG).

Award amount: €510,000.

**[2004;2005]** Member of *KAA* (National ACI).

Coordinator: Stéphane Ubéda.

Partners: INSA-Lyon (CITI, MAPPLY), ÉNS-Lyon (LIP), Univ. Lyon 2 (LET), Univ. Saint-Étienne (CER-DRID), Science Po Paris (CSO).

Award amount: €60,000.