
CURRICULUM VITAE OF Samuele Giraudo

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► LENGTH. 15 pages.

1 GENERAL INFORMATION

1.1 POSITIONS

- ❖ **December, 2022–today.**
Professor at the universit  du Qu bec   Montr al (UQAM) in Canada.
- ❖ **September, 2012–December, 2022.**
Associate Professor (“ma tre de conf rences” in French) at the universit  Gustave Eiffel (UGE) in France.
- ❖ **October, 2009–August, 2012.**
PhD student at the universit  Paris-Est Marne-la-Vall e in France.

1.2 ADMINISTRATIVE DATA

- ❖ **First name.** Samuele.
- ❖ **Last name.** Giraudo.
- ❖ **Date and place of birth.** September 27, 1986, Vizzolo Predabissi (Milan), Italy.
- ❖ **Citizenship.** Italian.
- ❖ **Place of residence.** Canada.
- ❖ **Professional address.**
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1.3 FORMATION AND DEGREES

- ❖ **2017.** Habilitation thesis (“Habilitation   diriger des recherches” in French), universit  Paris-Est Marne-la-Vall e, France.
 - ❖ *Thesis title.* Operads in algebraic combinatorics.
 - ❖ *Guarantor.* Jean-Yves Thibon.
 - ❖ *Reviewers.* Pierre-Louis Curien, Lo c Foissy, and Dominique Manchon.
 - ❖ *Examiners.* Fr d ric Chapoton (jury president), Alessandra Frabetti, Florent Hivert, and Jean-Gabriel Luque.
 - ❖ *Host laboratory.* LIGM.
 - ❖ *Defended on.* December 4, 2017.

- ❖ **2009–2011.** PhD in computer science, universit  Paris-Est Marne-la-Vall e, France.
 - ❖ *Thesis title.* Combinatoire alg brique des arbres.
 - ❖ *Advisors.* Florent Hivert and Jean-Christophe Novelli.
 - ❖ *Reviewers.* Fr d ric Chapoton, Sylvie Corteel, and Nathan Reading.
 - ❖ *Examiners.* Cyril Nicaud, Gilles Schaeffer, and Xavier G rard Viennot (jury president).
 - ❖ *Host laboratory.* LIGM.
 - ❖ *Defended on.* December 8, 2011.
- ❖ **2007–2009.** Master in computer science, universit  de Rouen, France.
 - ❖ *Thesis title.* Les arbres  quilibr s dans l'ordre de Tamari.
 - ❖ *Advisor.* Florent Hivert.
 - ❖ *Host laboratory.* LITIS.
 - ❖ *Defended on.* July 6, 2009.
- ❖ **2004–2007.** Bachelor in computer science, universit  de Rouen, France.

2 RESEARCH ACTIVITY

2.1 DESCRIPTION

My research is centered at the intersection of combinatorics, algebra, and theoretical computer science. My primary goal is to develop novel methods for counting and enumerating a wide range of combinatorial objects, including trees, permutations, words, and heaps of pieces. To achieve this, I employ various algebraic structures, such as lattices, Hopf bialgebras, operads, clones, and pros, as they offer a strong formalism and a promising approach to designing new counting mechanisms. Additionally, I am particularly interested in term rewrite systems, as they are critical in comprehending many types of algebraic structures. Recently, I have been investigating the combinatorial properties of specific fragments of combinatory logic.

KEY WORDS. Combinatorics; Algebraic combinatorics; Enumerative combinatorics; Algorithmics; Permutation; Tree; Generating series; Formal power series; Term rewrite system; Hopf bialgebra; Operad; Clone; Pro; Combinatory logic.

2.2 SCIENTIFIC PRODUCTION

2.2.1 BOOKS.

1. [S. Girardo](#). *Nonsymmetric Operads in Combinatorics*, Springer Nature Switzerland AG, viii+172 pages, 2018.

2.2.2 JOURNAL PAPERS.

1. [S. Girardo](#). The music box operad: Random generation of musical phrases from patterns. *Journal of Creative Music Systems*, 8, Issue 1, 2024.
2. [S. Girardo](#). Operads of decorated cliques II: Noncrossing cliques. *S minaire Lotharingien de Combinatoire*, B79h, 2023.

3. [S. Giraud](#). The combinator \mathbf{M} and the Mockingbird lattice. *Mathematical Structures in Computer Science*, 32, Issue 3, 271–299, 2022.
4. C. Combe, [S. Giraud](#). Cliff operads: a hierarchy of operads on words. *Journal of Algebraic Combinatorics*, 57, 239–269, 2022.
5. C. Combe, [S. Giraud](#). Three Fuss-Catalan posets in interaction and their associative algebras, *Combinatorial Theory*, 2, Issue 1, 2022.
6. [S. Giraud](#). Duality of graded graphs through operads. *Annals of Combinatorics*, 25, 255–305, 2021.
7. [S. Giraud](#). Operads of decorated cliques I: Construction and quotients. *Séminaire Lotharingien de Combinatoire*, B79g, 2020.
8. [S. Giraud](#). Tree series and pattern avoidance in syntax trees. *Journal of Combinatorial Theory, Series A*, 176, 2020.
9. [S. Giraud](#). Colored operads, series on colored operads, and combinatorial generating systems. *Discrete Mathematics*, 342, Issue 6, 1624–1657, 2019.
10. C. Chenavier, C. Cordero, [S. Giraud](#). Quotients of the magmatic operad: lattice structures and convergent rewrite systems. *Experimental Mathematics*, 2019.
11. [S. Giraud](#), S. Vialette. Algorithmic and algebraic aspects of unshuffling permutations. *Theoretical Computer Science*, 729, 20–41, 2018.
12. J.-P. Bultel, [S. Giraud](#). Combinatorial Hopf algebras from PROs. *Journal of Algebraic Combinatorics*, 44(2), 455–493, 2016.
13. [S. Giraud](#). Operads from posets and Koszul duality. *European Journal of Combinatorics*, 56C, 1–32, 2016.
14. [S. Giraud](#). Pluriassociative algebras II: The polydendriform operad and related operads. *Advances in Applied Mathematics*, 77, 43–85, 2016.
15. [S. Giraud](#). Pluriassociative algebras I: The pluriassociative operad. *Advances in Applied Mathematics*, 77, 1–42, 2016.
16. [S. Giraud](#), J.-G. Luque, L. Mignot, F. Nicart. Operads, quasiorders, and regular languages. *Advances in Applied Mathematics*, 75, 56–93, 2016.
17. H. Cheballah, S. Giraud, R. Maurice. Hopf algebra structure on packed square matrices. *Journal of Combinatorial Theory, Series A*, 133, 139–182, 2015.
18. [S. Giraud](#). Combinatorial operads from monoids. *Journal of Algebraic Combinatorics*, 41, Issue 2, 493–538, 2015.
19. F. Chapoton, [S. Giraud](#). Enveloping operads and bicoloured noncrossing configurations. *Experimental Mathematics*, 23, Issue 3, 332–349, 2014.
20. [S. Giraud](#). Construction d’opéades ensemblistes à partir de monoïdes. *Comptes-Rendus de l’Académie des Sciences*, 350, Issue 11-12, 549–552, 2012.
21. [S. Giraud](#). Algebraic and combinatorial structures on pairs of twin binary trees. *Journal of Algebra*, 360, 115–157, 2012.

22. S. Giraud. Intervals of balanced binary trees in the Tamari lattice. *Theoretical Computer Science*, 420, 1–27, 2012.

2.2.3 CONFERENCE PAPERS.

1. S. Giraud, Y. Vargas. Operads of packed words, quotients, and monomial bases. *Formal Power Series and Algebraic Combinatorics*, 2025.
2. S. Giraud. Mockingbird lattices. *Formal Power Series and Algebraic Combinatorics, Séminaire Lotharingien de Combinatoire*, 86B.3, 2022.
3. L. Bulteau, S. Giraud, S. Vialette. Disorders and permutations. *32nd Annual Symposium on Combinatorial Pattern Matching*, 191, 2021.
4. S. Giraud. Generation of musical pattern through operads. *Journées d’informatique musicale*, 2020.
5. C. Combe, S. Giraud. Three interacting families of Fuss-Catalan posets. *Formal Power Series and Algebraic Combinatorics, Séminaire Lotharingien de Combinatoire*, 84B.22, 2020.
6. J.-C. Aval, S. Giraud, T. Karaboghossian, A. Tanasa. Graph insertion operads. *Formal Power Series and Algebraic Combinatorics, Séminaire Lotharingien de Combinatoire*, 84B.66, 2020.
7. G. Fertin, S. Giraud, S. Hamel, S. Vialette. Unshuffling permutations: Trivial bijections and compositions. *Theory and Applications of Models of Computation*, 242–261, 2019.
8. C. Chenavier, C. Cordero, S. Giraud. Generalizations of the associative operad and convergent rewrite systems. *Higher-Dimensional Rewriting and Algebra*, Preprint no. 143, 2018.
9. S. Giraud. Comb-algebraic structures on decorated cliques. *Formal Power Series and Algebraic Combinatorics, Séminaire Lotharingien de Combinatoire*, 78B.15, 2017.
10. S. Giraud, S. Vialette. Unshuffling Permutations. *Latin American Theoretical Informatics Symposium*, LNCS 9644, 509–521, 2016.
11. S. Giraud. Constructing combinatorial operads from monoids. *Formal Power Series and Algebraic Combinatorics*, 229–240, 2012.
12. S. Giraud. Algebraic and combinatorial structures on Baxter permutations. *Formal Power Series and Algebraic Combinatorics*, 387–398, 2011.
13. S. Giraud. Balanced binary trees in the Tamari lattice. *Formal Power Series and Algebraic Combinatorics*, 596–607, 2010.

2.2.4 MISCELLANEOUS.

1. S. Giraud. Operads in algebraic combinatorics. Habilitation thesis (“Habilitation à diriger des recherches” in French), université Paris-Est Marne-la-Vallée, 2017.
2. S. Giraud. Combinatoire algébrique des arbres. PhD thesis, université Paris-Est Marne-la-Vallée, 2011.
3. S. Giraud. Les arbres équilibrés dans l’ordre de Tamari. Master’s thesis, université de Rouen, 2009.

2.2.5 PRE-PUBLICATIONS.

1. S. Giraud. Polynomial realizations of Hopf algebras built from nonsymmetric operads, 2024.
2. G.-S. Cheong, H. J. Choi, S. Giraud, A. Mesinga Mwafise. Operad Structure of Poset Matrices, 2024.
3. S. Giraud. Clones of pigmented words and realizations of special classes of monoids, 2023.
4. J.-C. Aval, S. Giraud, T. Karaboghossian, A. Tanasa. Operads on graphs: extending the pre-Lie operad and general construction, 2023.

2.3 COMMUNICATIONS**2.3.1** AS INVITED MAIN SPEAKER IN CONFERENCES AND WORKSHOPS.

1. *An introduction to operator structures: operads*, February 23, 2022, Seoul, Korea, remotely.
2. *Combinatorial operads, rewrite systems, and formal grammars*, July 1, 2019, Computational Logic and Applications, Versailles, France.

2.3.2 AS INVITED IN CONFERENCES.

1. *Natural Hopf algebras and polynomial realizations through related alphabets*, July 11, 2024, Algebraic Combinatorics and Finite Groups III, Cetraro, Italy.
2. *The Mockingbird lattice*, January 13, 2023, Computational Logic and Applications, Palaiseau, France, remotely.
3. *Clones of pigmented words and realizations of varieties of monoids*, December 2, 2022, International Conference on Matrix Theory with Applications to Combinatorics, Optimization and Data Science, Seogwipo KAL Hotel Jeju, Korea, remotely.
4. *Combinatorial realizations of algebraic structures*, November 5, 2020, Journée opérades LAGA-LIPN 2020, Paris, France, remotely.
5. *Some combinatorial structures related to operads*, February 7, 2019, Séminaire Flajolet, IHP, Paris, France.
6. *Algebraic structures, series, and enumeration*, April 5, 2018, Journées Nationales 2018 du GDR Informatique Mathématique, Palaiseau, France.
7. *Operads, enumeration, and constructions*, September 28, 2017, Discrete Structures Days, Rouen, France.
8. *Series on colored operads and combinatorial generation*, January 27, 2016, Workshop Category, Homotopy and Rewriting, Toulouse, France.
9. *From PROs to combinatorial Hopf algebras*, September 24, 2013, Journées Trees and graphs, LIPN, Paris, France.
10. *Construction d'opérades combinatoires à partir de monoïdes et application aux algèbres de Hopf combinatoires*, February 2, 2012, Journées de Combinatoire de Bordeaux, Bordeaux, France.

2.3.3 IN CONFERENCES.

1. *Mockingbird lattices*, July 2022, Formal Power Series and Algebraic combinatorics, Bangalore, India.
2. *Algebraic and combinatorial structures on decorated cliques*, July 2017, Formal Power Series and Algebraic Combinatorics, London, United Kingdom.
3. *Opérades \sqcup combinatoire*, June 21, 2017, Journées du GT-CombAlg, LIGM, Paris, France.
4. *Unshuffling Permutations*, April 15, 2016, Latin American Theoretical Informatics Symposium 2016, Ensenada, Mexico.
5. *Opérades colorées et combinatoire*, June 14, 2013, Journées du GT-CombAlg, LIGM, Paris, France.
6. *Constructing combinatorial operads from monoids*, July 31, 2012, Formal Power Series and Algebraic Combinatorics, Nagoya, Japan.
7. *Algebraic and combinatorial structures on Baxter permutations*, June 2011, Formal Power Series and Algebraic combinatorics, Reykjavik, Iceland.
8. *Algebraic and combinatorial structures on Baxter permutations*, March 8, 2011, Séminaire Lotharingien de Combinatoire, Ellwangen, Germany.
9. *Balanced binary trees in the Tamari lattice*, August 2010, Formal Power Series and Algebraic combinatorics, San Francisco, United States of America.
10. *Construction algébrique sur les objets de Baxter*, June 24, 2010, Journées du GT-CombAlg, LIGM, Paris, France.

2.3.4 IN LABORATORIES AND TEAM SEMINARS.

1. *Natural Hopf algebras of operads and their polynomial realization*, April 11, 2024, LMPA, Calais, France, remotely.
2. *Polynomial realizations of Hopf algebras from operads*, March 21, 2024, IDP, Tours, France, remotely.
3. *Some enumerative and order-theoretic properties in combinatorial logic*, April 11, 2023, Logic Seminar, Pittsburg, United States, remotely.
4. *The Mockingbird system Order-theoretic and enumerative properties* January 13, 2023, LACIM, Montreal, Canada.
5. *Une promenade autour des termes, des opérades et des clones*, December 2, 2021, département d'informatique de l'UQAM, Montreal, Canada.
6. *Operads of musical phrases and generation*, July 27, 2021, Online research seminar: Algebra, Geometry & Physics, Berlin & Bonn, Germany, remotely.
7. *Clone realizations of semigroup varieties*, June 24, 2021, Algebraic rewriting seminar, France, remotely.
8. *Some combinatorial aspects of combinatorial logic*, March 31, 2021, LIX, Palaiseau, France, remotely.

9. *Interstice operads of words*, February 23, 2021, LIPN, Paris, France, remotely.
10. *A hierarchy of operads on words*, February 4, 2021, LMPA, Calais, France, remotely.
11. *Associative algebras on cliffs*, April 24, 2020, DI ENS, Paris, France, remotely.
12. *Cliff posets and algebras*, April 1, 2020, GREYC, Caen, France, remotely.
13. *Pattern avoidance in trees, operads, and enumeration*, September 17, 2019, LIPN, Paris, France.
14. *Graded graphs and operads*, February 21, 2019, IRIF, Paris, France.
15. *Tree rewriting and enumeration*, September 17, 2018, LaBRI, Bordeaux, France.
16. *Opérades, séries formelles et arbres à motifs exclus*, March 29, 2018, LAGA, Paris, France.
17. *Séries d'arbres, motifs exclus et opérades*, March 8, 2018, IRIF, Paris, France.
18. *Opérades, séries et combinatoire*, January 23, 2018, GREYC, Caen, France.
19. *Bigèbres de Hopf combinatoires des pros*, July 5, 2017, LIX, Palaiseau, France.
20. *Découpage d'associativité généralisé*, June 15, 2017, IRIF, Paris, France.
21. *Grammaires à bourgeons*, June 13, 2017, LIPN, Paris, France.
22. *Opérades des cliques décorées*, June 13, 2017, LIPN, Paris, France.
23. *Grammaires et séries d'opérades colorées*, November 17, 2016, LITIS, Rouen, France.
24. *Grammaires d'opérades colorées*, February 22, 2016, IRMA, Strasbourg, France.
25. *Polydendriiform algebras*, January 13, 2015, LIGM, Paris, France.
26. *Opérades pluriassociatives et polydendriiformes*, May 21, 2014, LIX, Palaiseau, France.
27. *Opérades colorées et configurations non croisées bicolores*, May 23, 2013, LITIS, Rouen, France.
28. *Construction of combinatorial operads*, April 20, 2012, Fields Institute, Toronto, Canada.
29. *L'opérade des configurations non croisées bicolores*, April 4, 2012, LaCIM, Montréal, Canada.
30. *Construction d'opérades combinatoires à partir de monoïdes*, November 10, 2011, LaCIM, Montréal, Canada.
31. *Les arbres binaires équilibrés dans le treillis de Tamari*, September 29, 2011, LIAFA, Paris, France.
32. *Algèbres de Hopf des permutations et des objets de Baxter*, March 1, 2011, LIPN, Paris, France.

2.3.5 MISCELLANEOUS.

1. *Combinatoire algébrique des opérations*, September 18, 2024, Presentation for graduate students in computer science, Université du Québec à Montréal, Montreal.
2. *Computing with trees*, March 6, 2024, Mercredis recherche, Université du Québec à Montréal.
3. *Logique combinatoire et treillis*, March 15, 2022, CNRS - INS2I visit, LIGM, Paris, France.

4. CALIMBA: *a language for computer music*, January 21, 2021, Creative Code Paris, France, remotely.
5. *Random generation of musical patterns through operads*, September 19, 2019, Creative Code Paris, France.
6. *Combinatorics, operations, and graded graphs*, February 12, 2019, HCERES evaluation, LIGM, Paris, France.

2.4 ASSOCIATED ACTIVITIES

2.4.1 STAY INVITATIONS.

1. Invitation for one week in April/May 2019 at LaBRI at Bordeaux in France.
2. Invitation for some days in September 2018 at LaBRI at Bordeaux in France.
3. Invitation for three weeks in April 2012 at Fields Institute at Toronto in Canada.
4. Invitation for two weeks in March/April 2012 at LaCIM at Montréal in Canada.
5. Invitation for one week in February 2012 at Institut Camille Jordan at Lyon in France.
6. Invitation for two weeks in January/February 2012 (“Invité Junior”) at LaBRI at Bordeaux in France.
7. Invitation for two weeks in November 2011 at LaCIM at Montréal in Canada.

2.4.2 PHD SUPERVISION.

1. Adrien Ségovia (co-supervised with Hugh Thomas), from 2022 to today.
2. Christophe Cordero (co-supervised with Jean-Christophe Novelli), from September 2016 to December 2019.

2.4.3 OTHER RESEARCH SUPERVISIONS.

1. Bachelor internship on n -gram language models for chess games, Carl-William Bilodeau-Savaria, 2025.
2. Bachelor internship on the Strahler statistics of binary trees, Nour Abdou, 2024.
3. Bachelor internship on operads and hook series, Louis-Félix Berthiaume, 2024.
4. Bachelor internship on partial order structures on trees, Nadir Hadji, 2024.
5. Master’s thesis on the combinatorics of the duplacial operad, Kevin Abdallah, 2023–2024.
6. Master 1 thesis on the enumeration of the generators of the operad of configurations of chords, Quentin Sinh, 2022.
7. Master 2 thesis on quasisymmetric functions and parking functions, Adrien Segovia, 2021.
8. Master 1 thesis on configurations of chords, Lilian Berruet, 2021.
9. Master 2 thesis on combinatorics of stammering tableaux, Bishal Deb, 2019.
10. Master 2 thesis on operads of parking functions, Ricardo Rojas-Echenique, 2018.

11. Master 2 thesis on operads of permutations, Tina Malalanirainy, 2016.
12. Master 1 thesis on rook placements and perfect matchings, Quentin Campos, 2015.
13. Bachelor internship on patterns in integer compositions, Arnaud Guerquin, 2014.

2.4.4 PARTICIPATIONS ON HABILITATION JURIES.

1. Examiner of the habilitation of Ludovic Mignot, December 2020.

2.4.5 PARTICIPATIONS ON PHD JURIES.

1. Reviewer of the PhD of Daniel Tamayo Jiménez, October 2023.
2. Reviewer of the PhD of Uran Meha, September 2021.
3. Examiner of the PhD of Edwin Hamel-de le court, December 2020.
4. Participation as co-adviser of the PhD of Christophe Cordero, December 2019.
5. Examiner of the PhD of Zakaria Chemli, March 2017.

2.4.6 MASTER THESIS REVIEWER.

1. Reviewer of the Master thesis of Louis Marin, 2024.
2. Reviewer of the Master thesis of Thomas Soulas, 2024.

2.4.7 REVIEWING ACTIVITIES.

1. For the journal *Memoirs of the AMS* in 2024.
2. For the journal *Algebraic combinatorics* in 2023.
3. For the journal *Mathematical Structures in Computer Science* in 2023.
4. For the journal *Information Processing Letters* in 2023.
5. For the journal *Annals of Combinatorics* in 2023.
6. For the journal *Discrete Mathematics* in 2021.
7. For the journal *Symmetry, Integrability and Geometry: Methods and Applications* in 2021.
8. For the conference *International Symposium on Symbolic and Algebraic Computation* (two times) in 2021.
9. For the journal *Séminaire Lotharingien de Combinatoire* in 2020.
10. For the journal *Logical Methods in Computer Science* in 2019.
11. For the journal *Linear and Multilinear Algebra* in 2018.
12. For the journal *Journal of Pure and Applied Algebra* in 2018.
13. For the journal *Journal of Combinatorial Theory, Series A* in 2017.
14. For the journal *Journal of Algebra* in 2017.
15. For the journal *Journal of Algebraic Combinatorics* in 2016.

16. For the journal *RAIRO - Theoretical Informatics and Applications* in 2015.
17. For the journal *Journal of Combinatorial Theory, Series A* in 2015.
18. For *Mathematical Reviews* (two times) in 2015.
19. For the journal *Séminaire Lotharingien de Combinatoire* in 2015.
20. For the journal *Discrete Mathematics* in 2015.
21. For the journal *Journal of Combinatorial Mathematics and Combinatorial Computing* in 2014.
22. For the journal *Journal of Combinatorial Theory, Series A* in 2014.
23. For the journal *Discrete Mathematics* in 2013.
24. For the journal *Séminaire Lotharingien de Combinatoire* in 2013.

2.4.8 FUNDINGS AND PROJECT PARTICIPATIONS.

1. **2025–2030.** Member of the National Research Foundation of Korea project “Integrated research on combinatorics and algebra through matrix representations of partially ordered sets and operad theory”, led by G.-S. Cheon, 15,000 \$CA awarded.
2. **2024–2030.** NSERC Discovery Grant “Exploring combinatory logic via clone theory: an algebraic and combinatorial approach”, 170,000 \$CA awarded.
3. **2023–2025.** “Appui facultaire pour les activités de recherche”, offered by UQAM, 10,000 \$CA awarded.
4. **2023–2025.** “Programme d’aide financière à la recherche et à la création” (PAFARC), offered by UQAM, 15,000 \$CA awarded.
5. **2021–2025.** Member of the French National Research Agency project “A cartographic quest between lambda-calculus, logic, and combinatorics” (LambdaComb).
6. **2021–2024.** Member of the French National Research Agency project “Algebraic Combinatorics, Renormalization, Free probability and Operads” (CARPLO).
7. **2019–2024.** Member of the French National Research Agency project “**A**lgebraic **C**ombinatorics of **H**ikes **O**n **L**attices” (ALCOHOL).
8. **2019–2020.** Member of the DIM-RSFI “**S**pecies and **O**perads in **C**ombinatorics and **S**emantics” (SOCS).
9. **2018–2019.** Member of the DIM-RFSI about “**P**olynômes d’**E**hrhart des **a**ssociaèdres” (PEAS).

2.4.9 ORGANIZATION OF SCIENTIFIC EVENTS.

1. Session “Algebraic and enumerative combinatorics” of the Canadian Mathematical Society, Summer Meeting 2025, <https://summer25.cms.math.ca/>, June 8 and 9, co-organized with J. Bastidas.
2. Conference “Species and Operads in Combinatorics and Semantics 2020”, <https://www.irif.fr/~socs2020>, December 10 and 11, 2020, co-organized with B. Delcroix-Oger, M. Josuat-Vergès, and C. Tasson.

2.4.10 SOFTWARE REALIZATIONS.

1. **2022–today.** *Qlusster*. A programming language to build sounds by granular synthesis. Page of the project: <https://github.com/SamueleGiraud/Qlusster>.
2. **2020–today.** *Aclove*. A programming language based on combinatory logic and term rewrite systems, with an advanced type system. Page of the project: <https://github.com/SamueleGiraud/Aclove>.
3. **2020–2023.** *Calimba*. A programming language to create music based on the theory of operads and clones. Page of the project: <https://github.com/SamueleGiraud/Calimba>.
4. **2019–2023.** *Bud Music Box*. A tool to generate random music from short patterns using operads, colored operads, and bud generating systems. Page of the project: <https://github.com/SamueleGiraud/Bud-Music-Box>.

2.4.11 MISCELLANEOUS.

1. **2024–today.** Member of the Centre de recherches mathématiques.

3 TEACHING ACTIVITY

3.1 ACTIVITY

I teach various fields of computer science from 2009.

In France, from 2009 to 2022, I have taught for about 770 h of lectures and 1180 h of exercise sessions.

In Canada, from 2023, I teach for about 180 h of lectures per year.

3.2 AUDIENCE

In France, from 2009 to 2022, my audience was mainly composed of

- ❖ Students of Bachelor in Mathematics and Computer science.
- ❖ Students of Master of Computer Science.
- ❖ Students of engineering schools.
- ❖ Students for a DUT (“Diplôme universitaire de technologie” in French, which is a kind of shorter bachelor, in only 2 years, intended to work in companies; from 2019, it was renamed in “Bachelor universitaire de technologie” and lasts 3 years).

In Canada, from 2023, my audience is mainly composed of undergraduate students.

3.3 MAIN LECTURES

In France, from 2009 to 2022, the main modules I taught and for which I was the responsible are the following.

- ❖ Imperative programming in C language, from 2012 to 2022.
- ❖ Functional programming in CAML language, from 2013 to 2022.
- ❖ Discrete mathematics, from 2012 to 2022.

- ❖ Architecture of computers, from 2011 to 2022.
- ❖ Algebraic combinatorics and operads, from 2015 to 2022.

In Canada, from 2023, I taught the following lectures.

- ❖ **Autumn 2024.** INF5130 *Algorithmique*.
- ❖ **Winter 2025.** INF1132 *Mathématiques pour l'informatique*.
- ❖ **Autumn 2024.** INF1132 *Mathématiques pour l'informatique*.
- ❖ **Autumn 2024.** INF6120 *Programation fonctionnelle et logique*.
- ❖ **Autumn 2023.** INF1132 *Mathématiques pour l'informatique*.
- ❖ **Autumn 2023.** INF6120 *Programation fonctionnelle et logique*.
- ❖ **Winter 2023.** INF1132 *Mathématiques pour l'informatique* (two groups).

3.4 SECONDARY LECTURES

In France, from 2009 to 2022, I intervened also in the teaching of the following.

- ❖ Zététique, a french word standing for the scientific method and the critical thinking, from 2017 to 2022.
- ❖ Various topic that are part of computer science: programming PYTHON, programming in JAVA, algorithms, graph theory, automata and languages, and logic, mainly from 2009.

3.5 INTERNSHIP SUPERVISION

In France, from 2009 to 2022, I have supervised the following student internships.

- ❖ Two TER (“Travail encadré de recherche“ en French) in the third year of bachelor degree in computer science in 2020–2021.
- ❖ One tutored project in the second year of DUT in computer science in 2020–2021.
- ❖ Two TER in the third year of bachelor degree in computer science in 2018–2019.
- ❖ Two tutored projects in the second year of DUT in computer science in 2018–2019.
- ❖ One tutored project in the second year of DUT in computer science in 2016–2017.
- ❖ Two TER in the third year of bachelor degree in computer science in 2016–2017.
- ❖ Three TER in the third year of bachelor degree in computer science in 2014–2015.
- ❖ One TER in the third year of bachelor degree in computer science in 2013–2014.

Moreover, I have been an academic referent (which consists in monitoring of students working in IT in a company) for the following students.

- ❖ A student of third year of bachelor degree in 2021-2022.
- ❖ A student of first year of Master in 2021-2022.
- ❖ A student of first year of engineer school in 2021-2022.
- ❖ Three students of third year of bachelor degree in 2020–2021.

- ❖ A student of first year of Master in 2020–2021.
- ❖ A student of second year of Master in 2020–2021.
- ❖ A student of second year of Master in 2019–2020.

3.6 RELATED BUT DIFFERENT ACTIVITIES

- ❖ Participation in the open days of the Université Gustave Eiffel, for the presentation of the bachelor degree in computer science in 2022.
- ❖ Participation in the open days of the Université Gustave Eiffel, for the presentation of the bachelor degree in computer science in 2021, remotely.
- ❖ **September 2020–September 2022.** In charge of the third year of the bachelor of computer science at Université Gustave Eiffel.
- ❖ **April 2019–September 2022.** In charge of the computer science reference (“responsable de mention” in French) in the bachelor of Mathematics and Computer science at Université Gustave Eiffel.
- ❖ Participation in the open days of the Université Gustave Eiffel, for the presentation of the bachelor degree in computer science in 2020.

4 OTHER ACTIVITIES

4.1 RELATED WITH RESEARCH

- ❖ **2025–today.** Dean’s representative at thesis defenses of the Faculty of Sciences at UQAM.
- ❖ **2024.** External expert for the evaluation of thesis projects for Normandy University.
- ❖ **2023–today.** Co-responsible of the LACIM seminary.
- ❖ **2019–2022.** Member of the PhD monitoring committee of the doctoral school ED MSTIC (“École Doctorale Mathématiques et Sciences et Technologies de l’Information et de la Communication” in French).
- ❖ **2017–2022.** Member of the PhD committee of the doctoral school ED MSTIC.

4.2 RELATED WITH TEACHING

- ❖ **2025–today.** Substitute member of the Faculty Committee on Academic Offenses at UQAM.
- ❖ **2023–today.** Representative from the computer science department for the undergraduate program in mathematics at UQAM.
- ❖ **2023–today.** Representative from the computer science department for the Master’s in mathematics at UQAM.

4.3 MISCELLANEOUS

- ❖ **2023–2024.** union representative of the computer science department at UQAM.
- ❖ **2021.** Member of the selection committee for a PRAG position at Université Gustave Eiffel.

- ❖ **2020.** Member of the selection committee for a PRAG position at Université Gustave Eiffel.
- ❖ **2015–2022.** Member of the laboratory board of the LIGM.