Silvère Gangloff

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Curriculum vitæ

1 Employment

1.1 Current situation

Oct.2020- Researcher in artificial intelligence and machine learning in application to *natural (in particular technical) language processing*, at Izimade-AI, located at Station F (start-up incubator), 5 Parvis Alan Turing, 75013 France.

1.2 Past situations

Oct.2019-Oct.2020 Post-doctoral researcher, Center for sleep and consciousness, under supervision of G.Tononi. I worked on the notion of *causal structure for finite probabilistic dynamical systems*.

Sept.2018-Oct.2019 Post-doctoral researcher at LIP (laboratory of informatics and parallelism), ENS de Lyon, under supervision of Nathalie Aubrun and Michael Rao in the project ANR CoCoGro. I worked on *exact computation of entropy for multidimensional subshifts of finite type*.

Sept.2015-Sept.2018 PhD thesis at the university Aix-Marseille, under supervision of Mathieu Sablik and Guillaume Theyssier.
Subject : Algorithmic complexity of growth-type invariants of multidimensional subshifts of finite type under dynamical constraints.
Defense : at University Paul Sabatier, 28th of June 2018.
Jury : Mathieu Sablik (director), Guillaume Theyssier (director), Samuel Petite (member), Andrei Romash-chenko (member), Valérie Berthé (member), Jérôme Buzzi (president), Emmanuel Jeandel (reviewer), Michael Hochman (reviewer).

2015-2018 Mathematics and computer science teacher at Aix-Marseille University (Marseille,France) and University Paul Sabatier (Toulouse,France).

1.3 Predoctoral studies

2015 Agrégation de mathématiques (french competitive exam for teaching mathematics in high school) : 39th/$\sim$ 300.

2015 Master in Pure mathematics, University Pierre et Marie Curie, Paris (France). Speciality in dynamical systems.

2011-2015 Student at ENS Paris after passing competitive exams.

2 Publications

2.1 Accepted or published in peer-reviewed international journals

▷ *Effect of quantified irreducibility on the computability of subshift entropy*, with B. Hellouin, Discrete and Continuous dynamical systems, April 2019, 39(4) : 1975-2000. arXiv.

▷ *Quantified block gluing, aperiodicity and entropy of multidimensional SFT*, avec M. Sablik, to appear in Journal d'analyse mathématique, 80 pages, arXiv.

▷ *A characterization of entropy dimensions of tridimensional subshifts of finite type*, avec M. Sablik, accepted dans Discrete and continuous dynamical systems under condition of modifications, 78 pages, arXiv.

▷ *On the computability properties of topological entropy : a general approach*, with A. Herrera, C. Rojas, M. Sablik, accepted in Discrete and continuous dynamical systems, 27 pages, arXiv.

▷ *Asymptotic growth rate of square grids dominating sets : a symbolic dynamics approach*, with A. Talon, accepted in Theoretical computer science, 19 pages, arXiv.

2.2 Submitted

▷ *Simulation of minimal effective dynamical systems on the Cantor sets by minimal tridimensional subshifts of finite type*, with M. Sablik, arXiv.

▷ *A proof that square ice entropy is $\frac{3}{2}\log_2(4/3)$*, arXiv, submitted

▷ *From algebraic to coordinate Bethe ansatz for square ice*, arXiv, submitted.

▷ *A formal window on phenomenal objectness*, preprint, submitted.

3 Teaching activities

3.1 University teachings

1. **2015-2016 :** 96 hours of tutorials at IUT d'informatique d'Aix-Marseille : algorithmic theory of graphs and algebra for computer science.
2. **2016-2017 :** 96 hours of tutorials at IUT génie mécanique de l'Université Paul Sabatier : algebra and analysis.
3. **2017-2018 :** 96 hours of tutorials at the mathematics department of Université Paul Sabatier : algebra and analysis. **I wrote integral solutions of tutorial myself and provided them online to the students after each tutorial.**
4. **2018-2019 :** 16 hours of tutorials on Turing machines, department of computer science of Claude Bernard University, Lyon (France).

3.2 Miscellaneous

1. Oral interrogations, ~ 4 hours per week in preparatory schools, 2012-2013 and 2014-2015.
2. Contribution to writting corrections for examination in competitive exams (École polytechnique) in 2013 and 2014 for H&K editions.
3. Sensibilization to mathematics : I participated in 2015 at University Paul Sabatier (Hippocampe project) and in 2019 at ENS Lyon (project of Nathalie Aubrun) to sensibilization operations for high school and middle school students.

4 Research activities

4.1 Organisation of meetings

In March 2018, I organised with M.Sablik, C.Rojas and A.Chéritat an international workshop at University of Toulouse, Paul Sabatier, which gathered researchers in mathematics and computer sciences around algorithmic questions on dynamical systems (website of the conference : here).

During university year 2018-2019, during my post-doc at ENS Lyon, I was the main organiser of a work group related to my research work, around exact computations of entropy in statistical physics and symbolic dynamics, gathering once a month researchers in mathematics, computer science, and physics.

4.2 Selection of talks in conferences

1. Computability, Randomness and applications, CIRM, Marseille, Juin 2016.
2. Combinatorics, Automata and Number Theory, CIRM, Marseille, Décembre 2016.
3. Seminaire de l'équipe MC2, LIP, ENS Lyon, Février 2017.
4. Seminar Systemas dynamicos, Décembre 2018, Santiago Chile.
5. Colloquium University of Denver, Février 2019.
6. Séminaire Ernest, Marseille, Mars 2019
7. Journées SDA2, Juin 2019
8. Séminaire de l'équipe SymPA, LAMFA, Septembre 2019.