Curriculum Vitae

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Current Positions

Junior Researcher	**CNRS, LaBRI, Bordeaux**
Chargé de recherche	*Jan. 2018 – now*
Research Fellow	**Simons Institute, University of Berkeley**
Theoretical Foundations for Computer Systems	*Jan. 2021 – May. 2021*
Research Fellow	**Alan Turing Institute of data science, London**
Logical Foundations of Data Science	*Jan. 2017 – now (5 years fellowship)*

Past Positions

Research Fellow	**Simons Institute, University of Berkeley**
Logical Structures in Computation	*Aug. 2016 – Dec. 2016*
Research Assistant	**University of Oxford**
Dynamical Systems	*Nov. 2015 – July 2016*
Jointly supervised by Joël Ouaknine and James Worrell	

Education

PhD in Computer Science	**Paris 7 & Warsaw**
Counting and Randomising in Automata Theory	*Sep. 2012 – Oct. 2015*
Jointly supervised by Mikołaj Bojańczyk and Thomas Colcombet	

Research

My research is in computer science, at the intersection of formal methods and machine learning. My interests include games, machine learning, verification, and dynamical systems. Below is a selection of my research publications, a complete list can be found online.

Selection of Five Journal Publications

1. CONSISTENT UNSUPERVISED ESTIMATORS FOR ANCHORED PCFGS, with Alexander Clark.
   In **TACL**: *Transactions of the Association for Computational Linguistics*, 2020, 10 pages.
2. EXPRESSIVENESS OF PROBABILISTIC MODAL LOGICS: A GRADUAL APPROACH, with Florence Clerc, Bartek Klin, and Prakash Panangaden.
   In **I&C**: *Information and Computation*, 2019, 31 pages.
3. COMPLETE SEMIALGEBRAIC INVARIANT SYNTHESIS FOR THE KANNAN-LIPTON ORBIT PROBLEM, with Pierre Ohlmann, Joël Ouaknine, Amaury Pouly, and James Worrell.
   In **ToCS**: *Theory of Computing Systems*, 2019, 25 pages.
4. CHARACTERISATION OF AN ALGEBRAIC ALGORITHM FOR PROBABILISTIC AUTOMATA.
   In **TCS**: *Theoretical Computer Science*, 2017, 31 pages.
5. MONADIC SECOND-ORDER LOGIC WITH ARBITRARY MONADIC PREDICATES, with Charles Paperman.
   In **ToCL**: *ACM Transactions on Computational Logic*, 2017, 17 pages.

Selection of Five Articles in International Conference Proceedings

1. DATA GENERATION FOR NEURAL PROGRAMMING BY EXAMPLE, with Judith Clymo, Haik Manukian, Adrià Gascón, and Brooks Paige.

   In **AI&STATS'20**: *International Conference on Artificial Intelligence and Statistics*, 10 pages.

2. ASSUME-GUARANTEE SYNTHESIS FOR PROMPT LINEAR TEMPORAL LOGIC, with Bastien Maubert and Moshe Y. Vardi.

   In **IJCAI'20**: *International Joint Conference on Artificial Intelligence*, 22 pages.

3. UNIVERSAL TREES GROW INSIDE SEPARATING AUTOMATA: QUASI-POLYNOMIAL LOWER BOUNDS FOR PARITY GAMES, with Wojciech Czerwiński, Laure Daviaud, Marcin Jurdziński, Ranko Lazić, and Paweł Parys.

   In **SODA'19**: *Symposium On Discrete Algorithms*, 15 pages.

4. THE STATE COMPLEXITY OF ALTERNATING AUTOMATA.

   In **LICS'18**: *Logics in Computer Science*, 10 pages.

5. THE BRIDGE BETWEEN REGULAR COST FUNCTIONS AND OMEGA-REGULAR LANGUAGES, with Thomas Colcombet.

   In **ICALP'16**: *International Colloquium on Automata, Languages, and Programming*, 12 pages.

Selection of Five Invited Talks

Invited survey lecture
Jewels of Automata: from Mathematics to Applications (AutoMathA)   *25/04/2020*

Tutorial speaker
European Conference on Artificial Intelligence   *29/08/2020*

Invited speaker
International Symposium on Games, Automata, Logics, and Formal Verification   *02/09/2019*

Lecturer
ForMaL DigiCosme Spring School on Formal Methods and Machine Learning   *05/06/2019*

Invited speaker
Logical Structures for Computation at the Simons Institute in Berkeley   *12/12/2017*

Seminar Talks

London School of Economics (London, UK), RWTH i5 and i7 (Aachen, Germany), Data Factory (Bordeaux, France), 68NQRT (Rennes, France), LSV (Cachan, France), Bellairs Research Centre (Holetown, Barbados), MoVe (Marseille, France), LaBRI (Bordeaux, France), DIMAP (Warwick, UK), Theory group (Cambridge, UK), Algorithms group (Liverpool, UK), PUMA (Munich, Germany), LACL (Créteil, France), Verification group (Oxford, UK), ONERA (Toulouse, France), ULB (Brussels, Belgium), Reactive Systems group (Saarebrücken, Germany), LIGM (Marne-la-Vallée, France), Automata group (Warsaw, Poland) and Automata group (Paris, France).

Awards

CNRS Momentum (3 years, 180k€)   **Personal grant**
Deep Synthesis   *Jan 2019 – Dec 2021*

PEPS JCJC (1 year, 10k€)   **Personal grant**
Learning for Program Synthesis   *Jan 2018 – Dec 2018*

          Research Fellowship
Alan Turing Institute of Data Science   *Jan 2017 – Dec 2021*

Simons Institute for the Theory of Computing	**Research Fellowship**
	Aug 2016 – Dec 2016
	PhD distinction
Warsaw University	*Jan 2016*

Scientific Duties

Steering Committee Memberships

- Since **2018**: leader of the GT ALGA (part of GDR-IM, a French network gathering computer scientists and mathematicians).
- Since **2017**: publicity chair of the conference Highlights of Logic, Games, and Automata.

Programme Committee Memberships of International Conferences

- **2019**: International Colloquium on Automata, Languages and Programming (ICALP), Pratas.
- **2019**: Foundations of Software Systems and Computer Science (FoSSaCS), Prague.
- **2018**: Mathematical Foundations of Computer Science (MFCS), Liverpool.
- **2018** and **2019**: Highlights of Logic, Games and Automata, Berlin and Warsaw.

Organisation of Scientific Events

- **2020**: Learning and Verification day, second edition in Bordeaux (LaBRI).
- **2019**: Learning and Verification day, first edition in London (UCL).
- **2018**: Logic and learning FoPSS school in Oxford, affiliated to FLOC.
- **2018**: Summit on Machine Learning Meets Formal Methods in Oxford, affiliated to FLOC.
- **2018**: Logic and learning workshop in London (Alan Turing Institute of Data Science).

Organisation of Seminars and Working Groups

- Since **2018**: Theory of machine learning reading group in LaBRI.
- Since **2018**: Formal methods team seminar in LaBRI.
- **2017 – 2018**: Logic seminar at the Alan Turing Institute of Data Science.
- **2016**: Fellows Logic Open seminar at the Simons Institute.
- **2015 – 2016**: Verification seminar in Oxford.
- **2014 – 2015**: Automata seminar in LIAFA.

Student Supervision

- **2019 – 2021**: supervision of Guillaume Lagarde (postdoc).
- **2020 – 2022**: co-supervision of Antonio Casares (PhD).
- **2019 – 2022**: co-supervision of Ritam Raha (PhD).
- **2018 – 2021**: co-supervision of Pierre Ohlmann (PhD).
- Since **2017**: several summer interns from ENS, IIT Bombay, and Chennai Mathematical Institute.

Teaching

- Since **2018**: Reinforcement Learning, AI Master in Bordeaux.
- Since **2018**: Theory and Practice of Reinforcement Learning, PhD programme course.