

# Curriculum Vitae : Ocan SANKUR

## Address :

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## Positions

- 2015 – : CNRS Researcher (CRCN), Irisa (UMR 6074), Rennes, France.  
Part of the Inria SUMO team.
- 2013 – 2015 : Post-doctoral researcher in Université Libre de Bruxelles, Brussels, Belgium.  
ERC Project inVEST headed by Jean-François Raskin.

## Education

- 2010 – 2013 : LSV, École Normale Supérieure de Cachan & CNRS, Cachan, France.  
**PhD** in computer science. "*Robustness in Timed Automata : Analysis, Synthesis, Implementation*".
- 2007 – 2010 : École Normale Supérieure, Paris, France.  
*Licence* and *Master's* degrees
- 2005 – 2007 : Lycée Henri IV, Paris, France. Preparatory classes for graduate schools.  
Computer Engineering Department of Bogazici University, Istanbul, Turkey.
- 1997 – 2005 : Galatasaray High School, Istanbul, Turkey.

## Research Grants

- PI of ANR Ticktac (2019-2023) on Efficient Techniques and Tools for the Verification and Synthesis of Real-Time Systems.  $\approx 300K\text{€}$ .
- PI of INS2I JCJC SensAs (2017) on Formal Sensitivity Analysis of Quantitative Systems.  $10K\text{€}$ .

## Supervision

### Phd Students

1. Victor Roussanaly (2017-2020).
2. Arthur Queffelec (2018-2021)
3. Suman Sadhukhan (2018-2021)
4. Abdul Majith (2019-2022)
5. Nicolas Waldburger (started in 2021)

### Master Students

1. Victor Roussanaly, "Abstraction refinement for timed systems" (co-supervision with Nicolas Markey), ENS Rennes, 2017.
2. Arthur Queffelec, "Tradeoff between Robustness and Optimality in Strategic Reasoning" (co-supervision with François Schwarzentruher), ENS Rennes, 2018.

### Undergraduate Students

- Nabin Sahoo (Chennai Mathematical Institute, 2022)
- Ludovic Landuré (Université Rennes 1). "Modeling and verification of Ladder programs", May-Jul. 2018 (co-advised with Thierry Jéron, Nicolas Markey, David Mentré)
- Jérémy Thibault (ENS Rennes), Vincent Aubry (ENS Ulm). June-August 2016.

## Committees

- Program committee member of int. conferences ATVA 2023, AAI 2021, FSTTCS 2021, FORMATS 2014, 2018, 2019, 2020, and int. workshops SYNCOP'16, SYNT'16-18, SR'17. Artifact Evaluation committee for ESOP/FOSSACS 2023.
- Member of the hiring committee for Université de Nantes for *maître des conférences* positions. 2019. Member of the hiring committee for Université Aix-Marseille for a *maître des conférences* position. 2020.
- PhD jury of Aline Goeminne (Université de Mons, 2021), Clément Tamines (Université de Mons, 2022), Sayan Mukherjee (Chennai Mathematical Institute, 2022)

## Distinctions

- First prize in several tracks of the synthesis competition SYNT 2014, 2015, and 2016 (joint with R. Brenguier, G. Perez, J.-F. Raskin). Our tool AbsSynthe synthesizes small circuits that control a given synchronous circuit so as to satisfy a specification.
- Some distinctions for research projects in high school : 3rd prize in EU Young Researcher's Contest 2004 (Ireland), 3rd prize in INTEL International Science Fair 2005 (USA), 1st ranking in the national programming contest by Bilgi University in 2004.

## Software Development

- I have been developing symrob, a prototype model checker and robustness analysis tool for timed automata (OCaml).

## Visits to Foreign Universities

- Brown University, RI, USA. Six months research internship supervised by Claire Mathieu (2009).
- Polytechnic University, NY, USA. Three months internship supervised by Nasir Memon (2004).

## Teaching

### Courses

- 2019-2022 : Course (12 hours) on mathematical logic for *préparation à l'agrégation*. ENS Rennes.
- 2018-2022 : M2 course (10 hours) on advanced formal verification techniques (using BDDs, SAT solvers and abstraction techniques). ENS Rennes.
- 2017-2022 : Lab sessions (26 hours) for formal design and analysis (using Isabelle/HOL). Université Rennes 1.

### PhD Schools

- A course (2 hours) on reactive synthesis for real-time systems in *École temps-réel*, Rennes, 2015 and in Poitiers, 2021.

### Other activities

- Jury member for the *TP d'algorithmique* in the entrance exam of *écoles normales supérieures* (2016-2018). Coordinator of this jury since 2018.

## Selected Publications

- [1] Tristan Charrier, Arthur Queffelec, Ocan Sankur, and François Schwarzentruher. Complexity of planning for connected agents. *Auton. Agents Multi Agent Syst.*, 34(2) :44, 2020.
- [2] Mickael Randour, Jean-François Raskin, and Ocan Sankur. Percentile queries in multi-dimensional Markov decision processes. *Formal Methods in System Design*, pages 1–42, 2017.
- [3] Romain Brenguier, Jean-François Raskin, and Ocan Sankur. Assume-admissible synthesis. *Acta Informatica*, 54(1) :41–83, 2017.
- [4] C. Baier, N. Bertrand, J. Piribauer, and O. Sankur. Long-run satisfaction of path properties. In *2019 34th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*, pages 1–14, June 2019.

- [5] Victor Roussanaly, Ocan Sankur, and Nicolas Markey. Abstraction refinement algorithms for timed automata. In *Computer Aided Verification - 31st International Conference, CAV 2019, New York City, NY, USA, July 15-18, 2019, Proceedings, Part I*, pages 22–40, 2019.

# All Publications

## Publications in International Journals

- [1] Arthur Queffelec, Ocan Sankur, and François Schwarzentruber. Complexity of planning for connected agents in a partially known environment. *Theoretical Computer Science*, 2022.
- [2] Tristan Charrier, Arthur Queffelec, Ocan Sankur, and François Schwarzentruber. Complexity of planning for connected agents. *Auton. Agents Multi Agent Syst.*, 34(2) :44, 2020.
- [3] Mickael Randour, Jean-François Raskin, and Ocan Sankur. Percentile queries in multi-dimensional Markov decision processes. *Formal Methods in System Design*, pages 1–42, 2017.
- [4] Romain Brenguier, Jean-François Raskin, and Ocan Sankur. Assume-admissible synthesis. *Acta Informatica*, 54(1) :41–83, 2017.
- [5] Swen Jacobs, Roderick Bloem, Romain Brenguier, Rüdiger Ehlers, Timotheus Hell, Robert Könighofer, Guillermo A. Pérez, Jean-François Raskin, Leonid Ryzhyk, Ocan Sankur, Martina Seidl, Leander Tentrup, and Adam Walker. The first reactive synthesis competition (syntcomp 2014). *International Journal on Software Tools for Technology Transfer*, pages 1–24, 2016.
- [6] Patricia Bouyer, Nicolas Markey, and Ocan Sankur. Robust reachability in timed automata and games : A game-based approach. *Theoretical Computer Science*, 563(0) :43 – 74, 2015.
- [7] Ocan Sankur, Patricia Bouyer, and Nicolas Markey. Shrinking timed automata. *Information and Computation*, 234(0) :107 – 132, 2014.

## Publications in International Conferences

- [1] Nathalie Bertrand, Nicolas Markey, Suman Sadhukhan, and Ocan Sankur. Semilinear representations for series-parallel atomic congestion games. In Anuj Dawar and Venkatesan Guruswami, editors, *Proceedings of the 42nd Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS'22)*, volume 250 of *Leibniz International Proceedings in Informatics*. Leibniz-Zentrum für Informatik, December 2022.
- [2] Reiya Noguchi, Ocan Sankur, Thierry Jéron, Nicolas Markey, and David Mentré. Repairing real-time requirements. In Ahmed Bouajjani, Lukáš Holík, and Zhilin Wu, editors, *Proceedings of the 20th International Symposium on Automated Technology for Verification and Analysis (ATVA'22)*, Lecture Notes in Computer Science. Springer-Verlag, October 2022. To appear.
- [3] Patricia Bouyer, Paul Gastin, Frédéric Herbretreau, Ocan Sankur, and B. Srivathsan. Zone-based verification of timed automata : Extrapolations, simulations and what next ? In Sergiy Bogomolov and David Parker, editors, *Formal Modeling and Analysis of Timed Systems - 20th International Conference, FORMATS 2022, Warsaw, Poland, September 13-15, 2022, Proceedings*, volume 13465 of *Lecture Notes in Computer Science*, pages 16–42. Springer, 2022.
- [4] Aline Goeminne, Nicolas Markey, and Ocan Sankur. Non-blind strategies in timed network congestion games. In Sergiy Bogomolov and David Parker, editors, *Formal Modeling and Analysis of Timed Systems - 20th International Conference, FORMATS 2022, Warsaw, Poland, September 13-15, 2022, Proceedings*, volume 13465 of *Lecture Notes in Computer Science*, pages 183–199. Springer, 2022.
- [5] Jakob Piribauer, Ocan Sankur, and Christel Baier. The Variance-Penalized Stochastic Shortest Path Problem. In Mikołaj Bojańczyk, Emanuela Merelli, and David P. Woodruff, editors, *49th International Colloquium on Automata, Languages, and Programming (ICALP 2022)*, volume 229 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 129 :1–129 :19, Dagstuhl, Germany, 2022. Schloss Dagstuhl – Leibniz-Zentrum für Informatik.
- [6] Nathalie Bertrand, Nicolas Markey, Ocan Sankur, and Nicolas Waldburger. Parameterized Safety Verification of Round-Based Shared-Memory Systems. In Mikołaj Bojańczyk, Emanuela Merelli, and David P. Woodruff, editors, *49th International Colloquium on Automata, Languages, and Programming (ICALP 2022)*, volume 229 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 113 :1–113 :20, Dagstuhl, Germany, 2022. Schloss Dagstuhl – Leibniz-Zentrum für Informatik.
- [7] Jakob Piribauer, Christel Baier, Nathalie Bertrand, and Ocan Sankur. Quantified linear temporal logic over probabilistic systems with an application to vacuity checking. In Serge Haddad and Daniele Varacca, editors, *32nd International Conference on Concurrency Theory, CONCUR 2021, August 24-27, 2021, Virtual Conference*, volume 203 of *LIPIcs*, pages 7 :1–7 :18. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021.
- [8] Arthur Queffelec, Ocan Sankur, and François Schwarzentruber. Planning for Connected Agents in a Partially Known Environment. In *AI 2021 - 34th Canadian Conference on Artificial Intelligence*, pages 1–23, Vancouver / Virtual, Canada, May 2021.
- [9] Abdul Majith, Ocan Sankur, Herve Marchand, and Thai Dinh. Compositional model checking of a SDN platform. In *International Conference on the Design of Reliable Communication Networks (DRCN 2021)*, February 2021.
- [10] Nathalie Bertrand, Nicolas Markey, Suman Sadhukhan, and Ocan Sankur. Dynamic network congestion games. In *40th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2020)*, Goa, India, December 2020.
- [11] Thierry Jéron, Nicolas Markey, David Mentré and Reiya Noguchi, and Ocan Sankur. Incremental methods for checking real-time consistency. In *18th International Conference on Formal Modeling and Analysis of Timed Systems, FORMATS 2020.*, 2020.

- [12] Tristan Charrier, Arthur Queffelec, Ocan Sankur, and François Schwarzentruber. Reachability and coverage planning for connected agents. In *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China, August 10-16, 2019*, pages 144–150, 2019.
- [13] C. Baier, N. Bertrand, J. Piribauer, and O. Sankur. Long-run satisfaction of path properties. In *2019 34th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*, pages 1–14, June 2019.
- [14] Damien Busatto-Gaston, Benjamin Monmege, Pierre-Alain Reynier, and Ocan Sankur. Robust controller synthesis in timed büchi automata : A symbolic approach. In *Computer Aided Verification - 31st International Conference, CAV 2019, New York City, NY, USA, July 15-18, 2019, Proceedings, Part I*, pages 572–590, 2019.
- [15] Victor Roussanaly, Ocan Sankur, and Nicolas Markey. Abstraction refinement algorithms for timed automata. In *Computer Aided Verification - 31st International Conference, CAV 2019, New York City, NY, USA, July 15-18, 2019, Proceedings, Part I*, pages 22–40, 2019.
- [16] Tristan Charrier, Arthur Queffelec, Ocan Sankur, and François Schwarzentruber. Reachability and coverage planning for connected agents. In *Proceedings of the 18th International Conference on Autonomous Agents and MultiAgent Systems, AAMAS '19*, pages 1874–1876, Richland, SC, 2019. International Foundation for Autonomous Agents and Multiagent Systems.
- [17] Christel Baier, Nathalie Bertrand, Clemens Dubslaff, Daniel Gburek, and Ocan Sankur. Stochastic shortest paths and weight-bounded properties in markov decision processes. In *Proceedings of the 33rd Annual ACM/IEEE Symposium on Logic in Computer Science, LICS '18*, pages 86–94, New York, NY, USA, 2018. ACM.
- [18] Nicolas Basset, Gilles Geeraerts, Jean-François Raskin, and Ocan Sankur. Admissibility in concurrent games. In *44th International Colloquium on Automata, Languages, and Programming, ICALP 2017, July 10-14, 2017, Warsaw, Poland*, pages 123 :1–123 :14, 2017.
- [19] Ocan Sankur and Jean-Pierre Talpin. An Abstraction Technique For Parameterized Model Checking of Leader Election Protocols : Application to FTSP. In *23rd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, Uppsala, Sweden, April 2017.
- [20] Romain Brenguier, Guillermo A. Pérez, Jean-François Raskin, and Ocan Sankur. Admissibility in Quantitative Graph Games. In *36th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science*, Chennai, India, December 2016.
- [21] Romain Brenguier, Lorenzo Clemente, Paul Hunter, Guillermo A. Pérez, Mickael Randour, Jean-François Raskin, Ocan Sankur, and Mathieu Sassolas. Non-zero sum games for reactive synthesis. In Adrian-Horia Dediu, Jan Janoušek, Carlos Martín-Vide, and Bianca Truthe, editors, *Language and Automata Theory and Applications : 10th International Conference (LATA 2016), Prague, Czech Republic, March 14-18, 2016*, volume 9618 of *Lecture Notes in Computer Science*, pages 3–23, Cham, 2016. Springer International Publishing.
- [22] Romain Brenguier, Jean-François Raskin, and Ocan Sankur. Assume-admissible synthesis. In *Proceedings of the 26th International Conference on Concurrency Theory (CONCUR'15)*, 2015.
- [23] Mickael Randour, Jean-François Raskin, and Ocan Sankur. Percentile queries in multi-dimensional markov decision processes. In *Proceedings of the 25th International Conference on Computer Aided Verification (CAV'15)*, 2015.
- [24] Mickael Randour, Jean-François Raskin, and Ocan Sankur. Variations on the stochastic shortest path problem. In *16th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI'15)*, 2015.
- [25] Ocan Sankur. Symbolic quantitative robustness analysis of timed automata. In Christel Baier and Cesare Tinelli, editors, *Tools and Algorithms for the Construction and Analysis of Systems (TACAS'15)*, volume 9035 of *Lecture Notes in Computer Science*, pages 484–498. Springer Berlin Heidelberg, 2015.
- [26] Mickael Randour, Jean-François Raskin, and Ocan Sankur. Variations on the stochastic shortest path problem. In *16th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI'15)*, 2015.
- [27] Jean-François Raskin and Ocan Sankur. Multiple-Environment Markov Decision Processes. In Venkatesh Raman and S. P. Suresh, editors, *34th International Conference on Foundation of Software Technology and Theoretical Computer Science (FSTTCS 2014)*, volume 29 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 531–543. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, 2014.
- [28] Youssef Oualhadj, Pierre-Alain Reynier, and Ocan Sankur. Probabilistic robust timed games. In Paolo Baldan and Daniele Gorla, editors, *Proceedings of the 25th International Conference on Concurrency Theory (CONCUR'14)*, volume 8704 of *Lecture Notes in Computer Science*, pages 203–217. Springer, 2014.
- [29] Patricia Bouyer, Nicolas Markey, and Ocan Sankur. Robust weighted timed automata and games. In Víctor Braberman and Laurent Fribourg, editors, *Proceedings of the 11th International Conference on Formal Modelling and Analysis of Timed Systems (FORMATS'13)*, volume 8053 of *Lecture Notes in Computer Science*, pages 31–46, Buenos Aires, Argentina, August 2013. Springer.
- [30] Ocan Sankur, Patricia Bouyer, Nicolas Markey, and Pierre-Alain Reynier. Robust controller synthesis in timed automata. In Pedro R. D'Argenio and Hernán Melgratti, editors, *Proceedings of the 24th International Conference on Concurrency Theory (CONCUR'13)*, volume 8052 of *Lecture Notes in Computer Science*, pages 546–560, Buenos Aires, Argentina, August 2013. Springer.
- [31] Ocan Sankur. Shrinktech : A tool for the robustness analysis of timed automata. In Natasha Sharygina and Helmut Veith, editors, *Proceedings of the 23th International Conference on Computer Aided Verification (CAV'13)*, volume 8044 of *Lecture Notes in Computer Science*, pages 1006–1012, Saint Petersburg, Russia, July 2013. Springer.

- [32] Patricia Bouyer, Nicolas Markey, and Ocan Sankur. Robustness in timed automata. In Parosh Aziz Abdulla and Igor Potapov, editors, *Proceedings of the 7th Workshop on Reachability Problems in Computational Models (RP'13)*, volume 8169 of *Lecture Notes in Computer Science*, pages 1–18, Uppsala, Sweden, September 2013. Springer.
- [33] Patricia Bouyer, Nicolas Markey, and Ocan Sankur. Robust reachability in timed automata : A game-based approach. In Artur Czumaj, Kurt Mehlhorn, Andrew Pitts, and Roger Wattenhofer, editors, *Proceedings of the 39th International Colloquium on Automata, Languages and Programming (ICALP'12) – Part II*, volume 7392 of *Lecture Notes in Computer Science*, pages 128–140, Warwick, UK, July 2012. Springer.
- [34] Romain Brenguier, Stefan Göller, and Ocan Sankur. A comparison of succinctly represented finite-state systems. In Maciej Koutny and Irek Ulidowski, editors, *Proceedings of the 23rd International Conference on Concurrency Theory (CONCUR'12)*, volume 7454 of *Lecture Notes in Computer Science*, pages 147–161, Newcastle, UK, September 2012. Springer.
- [35] Ocan Sankur, Patricia Bouyer, and Nicolas Markey. Shrinking timed automata. In Supratik Chakraborty and Amit Kumar, editors, *Proceedings of the 31st Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS'11)*, Leibniz International Proceedings in Informatics, pages 90–102, Mumbai, India, December 2011. Leibniz-Zentrum für Informatik.
- [36] Patricia Bouyer, Kim G. Larsen, Nicolas Markey, Ocan Sankur, and Claus Thrane. Timed automata can always be made implementable. In Joost-Pieter Katoen and Barbara König, editors, *Proceedings of the 22nd International Conference on Concurrency Theory (CONCUR'11)*, volume 6901 of *Lecture Notes in Computer Science*, pages 76–91, Aachen, Germany, September 2011. Springer.
- [37] Patricia Bouyer, Nicolas Markey, and Ocan Sankur. Robust model-checking of timed automata via pumping in channel machines. In Uli Fahrenberg and Stavros Tripakis, editors, *Proceedings of the 9th International Conference on Formal Modelling and Analysis of Timed Systems (FORMATS'11)*, volume 6919 of *Lecture Notes in Computer Science*, pages 97–112, Aalborg, Denmark, September 2011. Springer.
- [38] Ocan Sankur. Untimed language preservation in timed systems. In Filip Murlak and Piotr Sankowski, editors, *Proceedings of the 36th International Symposium on Mathematical Foundations of Computer Science (MFCS'11)*, volume 6907 of *Lecture Notes in Computer Science*, pages 556–567, Warsaw, Poland, August 2011. Springer.
- [39] Claire Mathieu, Ocan Sankur, and Warren Schudy. Online correlation clustering. In Jean-Yves Marion and Thomas Schwentick, editors, *Proceedings of the 27th Annual Symposium on Theoretical Aspects of Computer Science (STACS'10)*, volume 5 of *Leibniz International Proceedings in Informatics*, pages 573–584, Nancy, France, March 2010. Leibniz-Zentrum für Informatik.

## Publications in International Workshops

- [1] Swen Jacobs, Roderick Bloem, Romain Brenguier, Robert Könighofer, Guillermo A. Pérez, Jean-François Raskin, Leonid Ryzhyk, Ocan Sankur, Martina Seidl, Leander Tentrup, and Adam Walker. The second reactive synthesis competition (syntcomp 2015). In *4th Workshop on Synthesis (SYNT 2015)*, volume 202 of *Electronic Proceedings in Theoretical Computer Science*, pages 27–57. Open Publishing Association, 2016.
- [2] Romain Brenguier, Guillermo A. Pérez, Jean-François Raskin, and Ocan Sankur. Compositional algorithms for succinct safety games. In *Proceedings 4th Workshop on Synthesis (SYNT'15)*, 2015.
- [3] Romain Brenguier, Guillermo A. Pérez, Jean-François Raskin, and Ocan Sankur. Absynthe : abstract synthesis from succinct safety specifications. In Krishnendu Chatterjee, Rüdiger Ehlers, and Susmit Jha, editors, *Proceedings 3rd Workshop on Synthesis (SYNT'14)*, volume 157 of *Electronic Proceedings in Theoretical Computer Science*, pages 100–116. Open Publishing Association, 2014.

## Theses

- [1] Ocan Sankur. Model-checking robuste des automates temporisés *via* les machines à canaux. Master's thesis, École Normale Supérieure, Paris, France, September 2010.
- [2] Ocan Sankur. *Robustness in Timed Automata : Analysis, Synthesis, Implementation*. Ph.d. thesis, Laboratoire Spécification et Vérification, Ecole Normale Supérieure de Cachan, France, June 2013.