Curriculum Vitae : Ocan SANKUR

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Experience

2015 – : Researcher at **CNRS**, within **University of Rennes**, France.
2013 – 2015 : Post-doctoral researcher in **Université Libre de Bruxelles**, Belgium.
2009 : Research intern, **Brown University** (6 months), RI, USA.
2004 : Research intern, **New York University** (4 months), New York, NY, USA.

Education

2010 – 2013 : **École Normale Supérieure de Paris-Saclay**, France.
PhD in computer science.
2007 – 2010 : **École Normale Supérieure**, Paris, France.
Undergraduate 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

— CIFRE PhD Thesis project with the software company NewLogUp (2023-2026). ≈ 150K€.
— PI of ANR Ticktac (2019-2023) on Efficient Techniques and Tools for the Verification and Synthesis of Real-Time Systems. ≈ 300K€.
— PI of INS2I JCJC SensAs (2017) on Formal Sensitivity Analysis of Quantitative Systems. 10K€.

Supervision

Phd Students

1. Victor Roussanaly (2017-2020). Co-supervised with Nicolas Markey.
2. Arthur Queffelec (2018-2021). Co-supervised with François Schwarzentruber.
3. Suman Sadhukhan (2018-2021). Co-supervised with Nathalie Bertrand, Nicolas Markey.
4. Abdul Majith (2019-2022). Co-supervised with Hervé Marchand, Dinh Thai Bui.
5. Nicolas Waldburger (2021-). Co-supervised with Nathalie Bertrand, Nicolas Markey.
6. Thibaut Le Marre (2023-). Co-supervised with François Schwarzentruber, and Jilles Dibangoye.
7. Victorien Desbois (2023-). Co-supervised with François Schwarzentruber, and NewLogUp.

Master Students

1. Thibaut Le Marre, "Reinforcement Learning for multi-agent path planning", co-supervised with François Schwarzentruber, Jilles Dibangoye, Université de Rennes, 2023.
2. Victorien Desbois, "Connected multi-agent path planning algorithms", co-supervised with François Schwarzentruber, Université de Rennes, 2023.
3. Victor Roussanaly, "Abstraction refinement for timed systems" (co-supervision with Nicolas Markey), ENS Rennes, 2017.
4. Arthur Queffelec, "Tradeoff between Robustness and Optimality in Strategic Reasoning" (co-supervision with François Schwarzentruber), ENS Rennes, 2018.

Undergraduate Students

— Pranav Ghorpade (Chennai Mathematical Institute, 2023)
— 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 2023-2024, GANDALF 2023-2024, AAAI 2021, FSTTCS 2021, FORMATS 2014, 2018-2020, 2023-2024, 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), for Université Aix-Marseille (2020), for Université de Rennes (2024).
— Reviewer for the PhD theses of Aline Goeminne (Université de Mons, 2021), Clément Tamines (Université de Mons, 2022), Sayan Mukherjee (Chennai Mathematical Institute, 2022), Gaëtan Staquet (Université de Mons, 2024).

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.

Teaching

Courses

— 2019-2022 : Course (12 hours) on mathematical logic for *préparation à l'agrégation*. ENS Rennes.
— 2018-2023 : 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.
— A course (3 hours) on model checking timed automata in MOVEP 2024, Rennes.

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.

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] Isseïnie Calviac, Ocan Sankur, and François Schwarzentruber. Improved complexity results and an efficient solution for connected multi-agent path finding. In *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS'23)*, May 2023. To appear.

[2] Bastien Thomas and Ocan Sankur. PyLTA : A Verification Tool for Parameterized Distributed Algorithms. In *TACAS 2023 - 29th International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, Paris, France, April 2023.

[3] Ocan Sankur. Timed Automata Verification and Synthesis via Finite Automata Learning. In *TACAS 2023 - 29th International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, Paris, France, April 2023.

[4] 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.

[5] 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.

[6] Patricia Bouyer, Paul Gastin, Frédéric Herbreteau, 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.

[7] 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.

[8] 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.

[9] 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.

[10] 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.

[11] Arthur Queffelec, Ocan Sankur, and FranÃ§ois 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.

[12] 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.

[13] 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.

[14] Thierry Jéron, Nicolas Markey, David Mentré andma 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.

[15] 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.

[16] 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.

[17] 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.

[18] 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.

[19] 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.

[20] 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.

[21] Nicolas Basset, Gilles Geeraerts, Jean-FranÃ§ois Raskin, and Ocan Sankur. Admissiblity 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.

[22] 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.

[23] 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.

[24] 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.

[25] Romain Brenguier, Jean-François Raskin, and Ocan Sankur. Assume-admissible synthesis. In *Proceedings of the 26th International Conference on Concurrency Theory (CONCUR'15)*, 2015.

[26] 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.

[27] 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.

[28] 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.

[29] 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.

[30] Jean-Francois 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.

[31] Youssouf 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.

[32] 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.

[33] 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.

[34] 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.

[35] 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.

[36] 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.

[37] 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.

[38] 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.

[39] 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.

[40] 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.

[41] 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.

[42] 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. Abssynthe : 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.