MOHAMED SIALA

PERSONAL INFORMATION

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	31031 Toulouse cedex 4, France

WORK EXPERIENCE

2018 -present — Associate professor in computer science
LAAS-CNRS, INSA Toulouse, France

2015 - 2018 — Post-doctoral researcher
Insight, Centre for Data Analytics, UCC, Ireland
Supervisor: Barry O'Sullivan

2012 - 2014 — Teaching assistant, INSA, Toulouse, France

EDUCATION

2012 – 2015 — PhD in computer science, INSA Toulouse, LAAS-CNRS, France
Title: *Search, propagation, and learning in sequencing and scheduling problems*
Funding: CNRS, Google, and Midi-Pyrénées region
Supervisors: Emmanuel Hebrard and Christian Artigues

2010 – 2012 — Master's degree in *AI and Decision Making*, *ENSI, Tunisia*

2007 – 2010 — Computer engineering diploma, *ENSI Tunisia*

2005 – 2007 — Bachelor's degree in Mathematics and Physics, "Classes préparatoires", *IPEIS, Tunisia*

AWARDS

2016 — **Honorable mention for the best Ph.D Thesis Award in AI,**
European Association for Artificial Intelligence

2012 — **Best paper award, honorable mention** for the paper "An Optimal Arc Consistency Algorithm for a Chain of Atmost Constraints with Cardinality", CP 2012 Conference

International Constraint Programming Competitions — **Mistral-2.0, an open-source constraint programming library that won multiple awards in the XCSP competition and the Minizinc Challenge (2017 to 2023)**

SUPERVISION

Ph.D — 2020-2023 · **[Graduated]** Co-supervising the PhD of Julien Ferry with Marie José Huguet and Sébastien Gambs:

Addressing Interpretability, Fairness & Privacy in Machine Learning Through Combinatorial Optimization Methods

2019-2022 · **[Graduated]** Co-supervising the PhD of Hao Hu with Marie José Huguet:

Interpretable Machine Learning Models via Maximum Boolean Satisfiability

2016-2019 · **[Graduated]** Co-supervising the PhD of Begum Genc with Barry O'Sullivan:

An Approach to Robustness in Stable Marriage and Stable Roommates Problems

B.S. & M.S.

2024: Akshita Kumar
2023: Alice Devilder
2023: Brenda Tonleunguissi
2023: Bryan Chen
2023: Mohamed yassine Loulou
2020: Sabine Muzellec
2020: Maxence Bieres
2020: Hao Hu
2020: Hosseim Nahal
2020: Julien Ferry

FUNDING AND INTERNATIONAL COLLABORATIONS

Project Funding

2022 - 2024 · Interactive Combinatorial Optimisation, PI, 20*k*, Funding: CIMI Toulouse, PI

2019 - 2023 · Operational Research for Fairness, Privacy and Interpretability in Machine Learning, co-PI, 20*k*, Funding: CIMI Toulouse, Co-PI

2019 - 2021 · LAAS-CNRS Starting Package, PI, 20*k*

2019 - 2020 · INSA Toulouse Starting Package, PI, 3*k*

2012 - 2014 · Ph.D Scholarship, Funding: **CNRS, Google, and Midi-Pyrénées Region,** 75*k*

Research Projects Participation

2020 - 2022 · Collaborator researcher in the *DEEP LEARNER EXPLANATION & VERIFICATION CHAIR* with Prof. Joao Marques Silva

2017 - 2018 · UTRC-UCC Cooperation Project, Cork, Ireland

2015 - 2018 · **Science Foundation Ireland**, Grants 12/RC/2289 and 16/RC/3918, co-funded under the European Regional Development Fund

Scientific Research Visits

10/2024 · Three months visit to University Of Lleida, Spain. Collaboration with João Marques Silva.

05/2022 · Six weeks visit to UQAM, Montréal, Canada. Collaboration with Sébastien Gambs and Ulrich Aïvodji.

02/2020 · Two weeks visit to the Department of Philosophy, University College Cork, Ireland.

01/2013 · One month visit to NICTA, UNSW, Sydney, Australia. Cooperation with : Nina Narodytska and Toby Walsh

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SERVICE

Administrative Roles

2020-2023 · Academic advisor and coordinator for the Distributed Systems and Big Data major at INSA Toulouse

2019 - 2021 · In charge of organising the ROC Seminar Series

2016 - 2018 · In charge of organising the Insight Seminar Series

2012 - 2014 · Ph.D students coordinator, LAAS-CNRS

Program Committee

IJCAI, International Joint Conferences on Artificial Intelligence: since 2019
Awarded Distinguished Program Committee in 2019

AAAI, AAAI Conference on Artificial Intelligence : PC since 2020

CP, International Conference on Principles and Practice of Constraint Programming: since 2017

ECAI, European Conference on Artificial Intelligence: 2016, 2018

CPAIOR, International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research, 2014, 2016, 2021, 2022, 2023, 2024

Journals

Artificial Intelligence, Computing Surveys, Constraints, JAIR

Organisation Committee

2020 · **Co-organising & co-chairing the Master Class of the CPAIOR'20 Conference**, Vienna, Austria

2019 · Member of the organisation committee of JFPC'19 (the French constraint programming conference), Albi, France

Science Outreach

10/2013 · The art of "decision making", Science Festival in Toulouse

MISCELLANEOUS

2024 · Awarded a six months sabbatical research period from INSA Toulouse (CRCT)

2024 · Three months scientific mobility funding to visit Prof. Joao Marques Silva at University of Lleida from INSA Toulouse (6*k*)

2014 · Finalist for the ROADEF Young Researcher Award

2012 · International Conference on Principles and Practice of Constraint Programming doctoral program grants, 2012, Quebec, Canada

Additional Skills and Experiences

2005-2024 · Violin player in various French, Irish, and Tunisian bands

2016 · Hike leader, UCC Mountaineering Club, Ireland

2007 - 2010 · Manager of the ENSI-Music association, Tunisia

PUBLICATIONS

Preprint

2024 Julien Ferry, Ulrich Aïvodji, Sébastien Gambs, Marie-José Huguet, and Mohamed Siala. Sok: Taming the triangle - on the interplays between fairness, interpretability and privacy in machine learning. *CoRR*, abs/2312.16191, 2023

2024

SATML 2024 Julien Ferry, Ulrich Aïvodji, Sébastien Gambs, Marie-José Huguet, and Mohamed Siala. Probabilistic dataset reconstruction from interpretable models. *CoRR*, abs/2308.15099, 2023

2023

Machine Learning Julien Ferry, Ulrich Aïvodji, Sébastien Gambs, Marie-José Huguet, and Mohamed Siala. Improving fairness generalization through a sample-robust optimization method. *Mach. Learn.*, 112(6):2131–2192, 2023

SATML 2023 Ulrich Aïvodji, Julien Ferry, Sébastien Gambs, Marie-José Huguet, and Mohamed Siala. Exploiting fairness to enhance sensitive attributes reconstruction. In *First IEEE Conference on Secure and Trustworthy Machine Learning, **SATML'23**, Raleigh, North Carolina, USA*, 2023

2022

AAAI 2022 Hao Hu, Marie-José Huguet, and Mohamed Siala. Optimizing binary decision diagrams with maxsat for classification. In *Thirty-Sixth AAAI Conference on Artificial Intelligence, **AAAI'22** 2022, 22 February 2022, Vancouver BC, Canada*, 2022

CPAIOR 2022 Ulrich Aïvodji, Julien Ferry, Sébastien Gambs, Marie-José Huguet, and Mohamed Siala. Leveraging integer linear programming to learn optimal fair rule lists. In *9th International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research, **CPAIOR'22**, Los Angeles, California USA*, 2022

2021

CIKM 2021 Ulrich Aïvodji, Julien Ferry, Sébastien Gambs, Marie-José Huguet, and Mohamed Siala. Faircorels, an open-source library for learning fair rule lists. In *30th ACM International Conference on Information and Knowledge Management, **CIKM** 2021, 1-5 November 2021, Gold Coast, Queensland, Australia*, 2021

2020

IJCAI 2020 Hao Hu, Mohamed Siala, Emmanuel Hebrard, and Marie-José Huguet. Learning optimal decision trees with maxsat and its integration in adaboost. In *Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence, **IJCAI** 2020*, pages 1170–1176, 2020

CP 2020 Alexey Ignatiev, Martin C. Cooper, Mohamed Siala, Emmanuel Hebrard, and João Marques-Silva. Towards formal fairness in

machine learning. In *Principles and Practice of Constraint Programming - 26th International Conference, **CP** 2020, Louvain-la-Neuve, Belgium, September 7-11, 2020, Proceedings*, pages 846–867, 2020

International Journal on Artificial Intelligence Tools

Mark Antunes, Vincent Armant, Kenneth N. Brown, Daniel A. Desmond, Guillaume Escamocher, Anne-Marie George, Diarmuid Grimes, Mike O'Keeffe, Yiqing Lin, Barry O'Sullivan, Cemalettin Ozturk, Luis Quesada, Mohamed Siala, Helmut Simonis, and Nic Wilson. Assigning and scheduling service visits in a mixed urban/rural setting. ***International Journal on Artificial Intelligence Tools***, 29, 2020

2019

CPAIOR 2019

Begum Genc, Mohamed Siala, Gilles Simonin, and Barry O'Sullivan. An approach to robustness in the stable roommates problem and its comparison with the stable marriage problem. In *Integration of Constraint Programming, Artificial Intelligence, and Operations Research - 16th International Conference, **CPAIOR** 2019, Thessaloniki, Greece, June 4-7, 2019, Proceedings*, pages 320–336, 2019

Information Processing Letters

Mohamed Siala and Barry O'Sullivan. Combinatorial search from an energy perspective. ***Information Processing Letters***, 148:23–27, 2019

Theoretical Computer Science

Begum Genc, Mohamed Siala, Gilles Simonin, and Barry O'Sullivan. Complexity study for the robust stable marriage problem. ***Theoretical Computer Science***, 775:76–92, 2019

2018

CPAIOR 2018

Guillaume Escamocher, Mohamed Siala, and Barry O'Sullivan. From backdoor key to backdoor completability: Improving a known measure of hardness for the satisfiable CSP. In *Integration of Constraint Programming, Artificial Intelligence, and Operations Research - 15th International Conference, **CPAIOR** 2018, Delft, The Netherlands, June 26-29, 2018, Proceedings*, pages 198–214, 2018

ICTAI 2018

Mark Antunes, Vincent Armant, Kenneth N. Brown, Daniel A. Desmond, Guillaume Escamocher, Anne-Marie George, Diarmuid Grimes, Mike O'Keeffe, Yiqing Lin, Barry O'Sullivan, Cemalettin Ozturk, Luis Quesada, Mohamed Siala, Helmut Simonis, and Nic Wilson. Assigning and scheduling service visits in a mixed urban/rural setting. In *IEEE 30th International Conference on Tools with Artificial Intelligence, **ICTAI** 2018, 5-7 November 2018, Volos, Greece*, pages 114–121, 2018

2017

IJCAI 2017

Begum Genc, Mohamed Siala, Barry O'Sullivan, and Gilles Simonin. Finding robust solutions to stable marriage. In *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence, **IJCAI** 2017, Melbourne, Australia, August 19-25, 2017*, pages 631–637, 2017

CP 2017

Mohamed Siala and Barry O'Sullivan. Rotation-based formulation for stable matching. In *Principles and Practice of Constraint Programming - 23rd International Conference, **CP** 2017,*

Melbourne, VIC, Australia, August 28 - September 1, 2017, Proceedings, pages 262–277, 2017

CPAIOR 2017 — Emmanuel Hebrard and Mohamed Siala. Explanation-based weighted degree. In *Integration of AI and OR Techniques in Constraint Programming - 14th International Conference, **CPAIOR** 2017, Padua, Italy, June 5-8, 2017, Proceedings*, pages 167–175, 2017

COCOA 2017 — Begum Genc, Mohamed Siala, Gilles Simonin, and Barry O'Sullivan. On the complexity of robust stable marriage. In *Combinatorial Optimization and Applications - 11th International Conference, **COCOA** 2017, Shanghai, China, December 16-18, 2017, Proceedings, Part II*, pages 441–448, 2017

ICTAI 2017 — Danuta Sorina Chisca, Mohamed Siala, Gilles Simonin, and Barry O'Sullivan. New models for two variants of popular matching. In *29th IEEE International Conference on Tools with Artificial Intelligence, **ICTAI** 2017, Boston, MA, USA, November 6-8, 2017*, pages 752–759, 2017

2016

Constraints — Nina Narodytska, Thierry Petit, Mohamed Siala, and Toby Walsh. Three generalizations of the FOCUS constraint. ***Constraints An International Journal***, 21(4):495–532, 2016

CPAIOR 2016 — Mohamed Siala and Barry O'Sullivan. Revisiting two-sided stability constraints. In *Integration of AI and OR Techniques in Constraint Programming - 13th International Conference, **CPAIOR** 2016, Banff, AB, Canada, May 29 - June 1, 2016, Proceedings*, pages 342–357, 2016

2015

Engineering Applications of Artificial Intelligence — Mohamed Siala, Emmanuel Hebrard, and Marie-José Huguet. A study of constraint programming heuristics for the car-sequencing problem. ***Engineering Applications of Artificial Intelligence***, 38:34–44, 2015

CP 2015 — Mohamed Siala, Christian Artigues, and Emmanuel Hebrard. Two clause learning approaches for disjunctive scheduling. In *Principles and Practice of Constraint Programming - 21st International Conference, **CP** 2015, Cork, Ireland, August 31 - September 4, 2015, Proceedings*, pages 393–402, 2015

2014

Constraints — Mohamed Siala, Emmanuel Hebrard, and Marie-José Huguet. An optimal arc consistency algorithm for a particular case of sequence constraint. ***Constraints An International Journal***, 19(1):30–56, 2014

CPAIOR 2014 — Christian Artigues, Emmanuel Hebrard, Valentin Mayer-Eichberger, Mohamed Siala, and Toby Walsh. SAT and hybrid models of the car sequencing problem. In *Integration of AI and OR Techniques in Constraint Programming - 11th International Conference, **CPAIOR** 2014, Cork, Ireland, May 19-23, 2014. Proceedings*, pages 268–283, 2014

2013

IJCAI 2013 — Nina Narodytska, Thierry Petit, Mohamed Siala, and Toby Walsh.

Three generalizations of the FOCUS constraint. In ***IJCAI** 2013, Proceedings of the 23rd International Joint Conference on Artificial Intelligence, Beijing, China, August 3-9, 2013*, pages 630–636, 2013

2012

CP 2012 [Honourable mention]

Mohamed Siala, Emmanuel Hebrard, and Marie-José Huguet. An optimal arc consistency algorithm for a chain of atmost constraints with cardinality. In *Principles and Practice of Constraint Programming - 18th International Conference, **CP** 2012, Québec City, QC, Canada, October 8-12, 2012. Proceedings*, pages 55–69, 2012