Curriculum Vitae
Bruno Lacerda

Flat 5, 214 Kennington Road
Kennington, Oxford
OX1 5PG
United Kingdom

+44 7701 069 657
bruno@robots.ox.ac.uk
http://ori.ox.ac.uk/~bruno/

RESEARCH INTERESTS

Planning under uncertainty, probabilistic model checking, multi-robot systems, service robotics, temporal logics, discrete event systems.

RESEARCH POSITIONS

September 2017 - Present	*Postdoctoral Research Assistant in Robotics* University of Oxford, Oxford, United Kingdom Service: ‣ Co-organiser of the Oxford Robotics Research Group Seminars
April 2013 - September 2017	*Research Fellow in Intelligent Robotics* University of Birmingham, Birmingham, United Kingdom Contribution to Projects: ‣ Spatio-Temporal Representations and Activities for Cognitive Control in Long-Term Scenarios (STRANDS). *EU-FP7.* ‣ Novel Dynamic Vehicle Scheduling and Path Planning Algorithms for Mobile Robotic and AGV Warehouse Order Picking. *TSB Smart Award.* ‣ Learning the structure and dynamics of human environments to support intelligent mobile robot behaviour. *EPSRC First Grant.* Teaching: ‣ 2015/2016, 2016/2017, Semester 2: Two lectures on multi-robot coordination for the Robot Programming module. ‣ 2014/2015, Semester 1: Part of the lecturer team for the Intelligent Robotics module. ‣ 2013/2014, Semester 1: Part of the demonstrator team for the Foundations of Computer Science module. Phd Co-Supervision: ‣ Lenka Mudrová. "Task Scheduling and Merging in Space and Time". Finished 2017. With Nick Hawes. ‣ Fatma Faruq. "Multi-robot Task Allocation and Planning with Formal Guarantees". Ongoing. With Nick Hawes and David Parker.
September 2008 - December 2008	*Research Grantee* Örebro University, Örebro, Sweden Contribution to Projects: ‣ Ecology of Physically Embedded Intelligent Systems.
March 2008 - August 2008	*Research Grantee* Instituto Superior Técnico, Lisbon, Portugal Development of translation tool between two xml representations of Petri nets. Development of research agenda and proposal for PhD application.

EDUCATION

2009 - 2013	*Doutoramento (PhD) in Electrical and Computer Engineering (Pass with merit)* Instituto Superior Técnico, Lisbon, Portugal Thesis: *"Supervision of Discrete Event Systems Based on Temporal Logic Specifications".* Advisor: Prof. Pedro U. Lima. Research visits: ‣ 09/2011 - 12/2011: University of California at Los Angeles, Los Angeles, CA, USA, hosted by Prof. Paulo Tabuada. ‣ 03/2010 - 06/2010: Universidad Carlos III de Madrid, Madrid, Spain, hosted by Prof. Miguel A. Salichs.
2002 - 2007	*Mestrado (MSc) in Mathematics and Applications* Instituto Superior Técnico, Lisbon, Portugal Thesis: *"Linear-Time Temporal Logic Control of Discrete Event Systems".* Advisors: Prof. Pedro U. Lima, Prof. Francisco M. Dionísio.
2002 - 2007	*Licenciatura (BSc) in Applied Mathematics and Computation* Instituto Superior Técnico, Lisbon, Portugal

AWARDED FUNDING

May 2016 - July 2016	Research Visit to Delft University of Technology LES & EPS PERCAT Career Development Competition (University of Birmingham) - £400 (maximum awardable amount) Ramsay Research Travel Fund (School of Computer Science, University of Birmingham) - £1500
September 2011 - December 2011	Research Visit to University of California at Los Angeles Funding for PhD Student Visits Abroad (Fundação para a Ciência e Tecnologia) - €3065
March 2010 - June 2010	Research Visit to University Carlos III de Madrid Funding for PhD Student Visits Abroad (Fundação para a Ciência e Tecnologia) - €1735

INVITED TALKS

February 2017	Workshop on Formal Methods in AI, University of Naples "Federico II", Naples, Italy
March 2017	Computer Science Department Seminar Series, University of Liverpool, UK
June 2017	Robolog Workshop, IRISA, Rennes, France
September 2017	Full-day Tutorial at 4th "Lucia" PhD School on AI and Robotics, Lisbon, Portugal

SERVICE TO THE COMMUNITY

Program Committee	International Joint Conference on Artificial Intelligence (IJCAI) - 2017, 2018 AAAI Conference on Artificial Intelligence (AAAI) - 2018 International Conference on Autonomous Agents and Multiagent Systems (AAMAS) - 2014, 2016, 2017, 2018 International Conference on Automated Planning and Scheduling (ICAPS) - 2016, 2017, 2018 European Conference of Artificial Intelligence (ECAI) - 2016, 2018 AAAI Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy - 2018 Introspective Methods for Reliable Autonomy Workshop @ IROS - 2017

Workshop on Autonomous Mobile Service Robots @ IJCAI - 2016
AI for Long-term Autonomy Workshop @ ICRA - 2016
Workshop on Autonomous Robots and Multirobot Systems @ AAMAS - 2016
Workshop on Artificial Intelligence and Robotics @ AAAI - 2014
AAAI Robotics Fellowships - 2015, 2016

Journal Reviewing   IEEE Transactions on Automatic Control (TACON)
                        IEEE Robotics & Automation Magazine (RAM)
                        IEEE Transactions on Automation Science and Engineering (T-ASE)
                        IEEE Control Systems Letters (L-CSS)
                        IEEE Transactions on Systems, Man, and Cybernetics (SMC)
                        IEEE Transactions on Intelligent Systems (IS)

Conference Reviewing   International Conference on Tools and Algorithms for the Construction and Analysis of
                        Systems (TACAS)
                        International Symposium on Distributed Autonomous Robotic Systems (DARS)
                        IEEE International Conference on Robotics and Automation (ICRA)
                        IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
                        IEEE Conference on Decision and Control (CDC)
                        American Control Conference (ACC)
                        IEEE International Conference on Automation Science and Engineering (CASE)

INDUSTRY POSITIONS
September 2007 -   *Junior Consultant*
February 2008   Everis, Consulting, IT, Outsourcing & Professional Services, Lisbon, Portugal
                       Participation in the development of a Business Continuity Plan for an insurance carrier.

April 2006 -   *Part-time Collaborator*
September 2006   Mercer Human Resource Consulting, Lisbon, Portugal
                       Development of a human resource management software tool.

PUBLICATIONS
Under Review   "Probabilistic planning with formal performance guarantees for mobile service robots".
                       Bruno Lacerda, Fatma Faruq, David Parker and Nick Hawes. *Submitted to International
                       Journal of Robotics Research (IJRR).*
                       "Simultaneous Task Allocation and Planning Under Uncertainty". Fatma Faruq, Bruno
                       Lacerda, Nick Hawes and David Parker. *Submitted to 2018 IEEE/RSJ International
                       Conference on Intelligent Robots and Systems (IROS).*
                       "Battery Charge Scheduling in Long-Life Autonomous Mobile Robots". Milan Tomy, Bruno
                       Lacerda, Nick Hawes and Jeremy Wyatt. *Submitted to 2018 IEEE/RSJ International
                       Conference on Intelligent Robots and Systems (IROS).*

Journal Papers   [1] "The STRANDS Project: Long-Term Autonomy in Everyday Environments". Nick
                           Hawes et al. *IEEE Robotics & Automation Magazine,* Vol. 24, No. 3, 2017.

[2] "On the Notion of Uncontrollable Marking in Supervisory Control of Petri Nets". Bruno Lacerda and Pedro U. Lima. *IEEE Transactions on Automatic Control,* Vol. 59, No. 11, 2014.

[3] "Linear-Time Temporal Logic Control of Discrete Event Models of Cooperative Robots". Bruno Lacerda and Pedro U. Lima. *Journal of Physical Agents*, Vol. 2, No. 1, 2008.

Conference Papers

[4] "Multi-Objective Policy Generation for Mobile Robots Under Probabilistic Time-Bounded Guarantees". In *Proceedings of the 27th International Conference on Automated Planning and Scheduling (ICAPS),* Pittsburgh, PA, USA, 2017.

[5] "Partial Order Temporal Plan Merging for Mobile Robot Tasks". Lenka Mudrová, Bruno Lacerda and Nick Hawes. In *Proceedings of the 22nd European Conference on Artificial Intelligence (ECAI)*, The Hague, Netherlands, 2016.

[6] "An Integrated Control Framework for Long-Term Autonomy in Mobile Service Robots". Lenka Mudrová, Bruno Lacerda and Nick Hawes. In *Proceedings of the 7th European Conference on Mobile Robotics (ECMR)*, Lincoln, UK, 2015.

[7] "Optimal Policy Generation for Partially Satisfiable Co-Safe LTL Specifications". Bruno Lacerda, David Parker and Nick Hawes. In *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI)*, Buenos Aires, Argentina, 2015.

[8] "Now or later? Predicting and maximising success of navigation actions from long-term experience". Jaime P. Fentanes, Bruno Lacerda, Tomas Krajnik, Nick Hawes and Marc Hanheide. In *Proceedings of the 2015 IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, WA, USA, 2015.

[9] "Optimal and dynamic planning for Markov decision processes with co-safe LTL specifications". Bruno Lacerda, David Parker and Nick Hawes. In *Proceedings of the 2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),* Chicago, IL, USA, 2014.

[10] "LTL-Based Decentralized Supervisory Control of Multi-Robot Tasks Modelled as Petri Nets". Bruno Lacerda and Pedro U. Lima. In *Proceedings of the 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Francisco, CA, USA, 2011.

[11] "Designing Petri Net Supervisors from LTL Specifications". Bruno Lacerda and Pedro U. Lima. In *Proceedings of the 2011 Robotics: Science and Systems Conference (RSS)*, Los Angeles, CA, USA, 2011.

[12] "Designing Petri Net Supervisors for Multi-Agent Systems from LTL Specifications (Extended Abstract)". Bruno Lacerda and Pedro U. Lima. In *Proceedings of the 10th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Taipei, Taiwan, 2011.

[13] "Petri Net Based Supervisory Control of a Social Robot with LTL Specifications". Bruno Lacerda, Pedro U. Lima, Javi Gorostiza and Miguel A. Salichs. In *Proceedings of the 11th International Conference On Mobile Robots And Competitions*, Lisbon, Portugal, 2011.

[14] "Petri Nets as an Analysis Tool for Data Flow in Wireless Sensor Networks". Bruno Lacerda and Pedro U. Lima. In P*roceedings of the 1st Portuguese Conference on Wireless Sensor Networks (CNRS)*, Coimbra, Portugal, 2011.

Workshop Papers

[15] "Nested Value Iteration for Partially Satisfiable Co-Safe LTL Specifications (Extended Abstract)". Bruno Lacerda, David Parker and Nick Hawes. In *Proceedings of the AAAI Fall Symposium on Sequential Decision Making for Intelligent Agents (SDMIA),* Arlington, Virginia, USA, 2015.

[16] "Optimal Motion Planning for Markov Decision Processes with Co-Safe Linear Temporal Logic Specifications". Bruno Lacerda, David Parker and Nick Hawes. In *Proceedings of the 31st Workshop of the UK Planning & Scheduling Special Interest Group (PlanSIG)*, Edinburgh, UK, 2014.

[17] "LTL Plan Specification for Robotic Tasks Modelled as Finite State Automata". Bruno Lacerda and Pedro U. Lima. In *Proceedings of the AAMAS '09 Workshop on Agent Design: Advancing from Practice to Theory (ADAPT)*, Budapest, Hungary, 2009.