

Contact information

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Qualifications

- 2000–2003 **PhD Computer Science**, *Universitat Politècnica de Catalunya*, Barcelona (Spain).
Thesis title: *A Multiagent Approach to Qualitative Navigation in Robotics* (Viva on 28/07/2003)
- 1993–1999 **BSc Computer Science**, *Universitat Politècnica de Catalunya*, Barcelona (Spain).

Current employment

Sep'13–
today **Postdoctoral Research Associate**, *Imperial College London*, UK.

Business experience

Feb'11–
today **Newronia SL**, *spin-off of Universitat de Girona (Spain)*, <http://www.newronia.com>.
Co-founder and advisor

Past employment

- 2011–2013 **Marie Curie Postdoctoral Fellow**, *Imperial College London*, (UK).
- 2006–2011 **Research Fellow (Ramón y Cajal)**, *Universitat de Girona*, Girona (Spain).
- 2004–2006 **Fulbright Postdoctoral Fellow**, *Carnegie Mellon University*, Pittsburgh, PA (USA).
- 2000–2003 **PhD student**, *Artificial Intelligence Research Institute (IIIA-CSIC)*, Bellaterra (Spain).

Grants awarded / Research funding

- 2010 **Marie Curie Intra-European Fellowship**, awarded by the European Union (FP7), Sep 2011–Sep 2013, Total amount: 272,980€.
- 2009 **National R&D&i Plan**, awarded by the Spanish Ministry of Science, Jan 2009 – Dec 2011, Project TIN2008-04547 (PI: Dr. Busquets), Total amount: 77,000€.
- 2008 **José Castillejo mobility grant**, awarded by the Spanish Ministry of Science, Sep 2008–Jul 2009, Total amount: 25,000€.
- 2006 **Ramón y Cajal program (Research Fellow) contract**, awarded by the Spanish Ministry of Science, Apr 2006–Apr 2011, Total amount: 175,400€.
- 2004 **MEC/Fulbright postdoctoral grant**, awarded by the Spanish Ministry of Science and the Fulbright Commission, Mar 2004–Mar 2006, Total amount: 58,960€.
- 2000 **FI predoctoral (PhD student) grant**, awarded by the Catalan Government, Jan 2000– Dec 2003, Total amount: 48,000€.

R&D certificates

- 2010 **I3 Programme (Incentives for the incorporation and strengthening of research activity)**, *Spanish Ministry of Science*.
Positive evaluation certifying that the research carried out in the previous 4 years (2006-2009) was outstanding
- 2010 **Tenure-track Lecturer accreditation**, *Catalan University Quality Assurance Agency (AQU)*.
Favourable report issued by AQU Catalunya

PhD supervisions

- 2006–2011 **Víctor Muñoz**, *Robustness in Resource Allocation*, Universitat de Girona, Spain, PhD Computer Science.
- 2006–2010 **Javier Murillo**, *Egalitarian Behaviour in Multi-Unit Combinatorial Auctions*, Universitat de Girona, Spain, PhD Computer Science.

R&D events organisation

- 2013 **Tutorial on Formal Models of Social Processes: The Pursuit of Computational Justice in Self-Organising Multi-Agent Systems**, 9 Sep, 2013, Conference on Self-Adaptive and Self-Organizing Systems, Philadelphia (USA), *Tutor*.
- 2013 **Workshop on Computationally Adapted {laws|policies|norms} for self-Organising Systems**, 13 Sep, 2013, Conference on Self-Adaptive and Self-Organizing Systems, Philadelphia (USA), *Co-organiser*.
- 2012 **Workshop on Technologies for the Organisation, Adaptation and Simulation of Transportation Systems**, 14 Sep, 2012, Conference on Self-Adaptive and Self-Organizing Systems, Lyon (France), *Co-organiser*.
- 2011 **12th European Agent Systems Summer School**, 11–15 July 2011, Girona, *Local organiser*.

Participation in R&D projects

- 2013-today **APS: Autonomic Power Systems**, *Research Associate*, Funded by EPSRC (UK).
Participants: 8 universities + 9 industrial partners
- 2010-2011 **ENERGOS: Automatic and smart management technologies for the future's energy distribution networks**, *Researcher*, Funded by the Centre for the Development of Industrial Technology (Spanish Ministry of Science).
Participants: 37 partners (17 industries + 20 research centers/universities)
- 2009-2011 **Robust Auctions through Satisfiability Modulo Theories**, *Principal researcher*, Funded by the Spanish Ministry of Science.
Participants: Universitat de Girona (Spain)
- 2006-2009 **Development and Application of Scheduling techniques in multi-agent environments**, *Researcher*, Funded by the Spanish Ministry of Science.
Participants: Univeritat de València (Spain), Universtitat de Girona (Spain)
- 2001-2004 **Multiagent system for qualitative landmark-based navigation**, *PhD student*, Funded by the Spanish Ministry of Science.
Participants: Institute of Robotics and Industrial Informatics (IRII-CSIC), Artificial Intelligence Research Institute (IIIA-CSIC)

Professional Memberships

- CCIA Catalan Association for Artificial Intelligence – part of the European Coordinating Committee for Artificial Intelligence (ECCAI)

Reviewing committees

- Journals** Journal of Autonomous Agents and Multiagent Systems; Computational Intelligence; IEEE Transactions on Systems, Man and Cybernetics; AI Communications; AI & Society; IEEE Transactions on Mechatronics; IEEE Transactions on Robotics; ACM Transactions on Autonomous and Adaptive Systems
- Conferences** AAAI (2012), AAMAS (2005), CCIA (2007-2013), DCAI (2012), ECAI (2008), EUMAS (2009-2013), HRI (2012, 2008, 2007), IBERAMIA (2008), ICINCO (2009, 2008), ICRA (2008), IJCAI (2013), IROS (2012), ISA (2009, 2008, 2007), MICAI (2008), PRIMA (2013, 2012), SASO (2013), Spatial Cognition (2006, 2004)
- Other** Agency for Management of University and Research Grants (AGAUR) of the Catalan Government

Invited talks

- Nov 2013 **Policy-making for low carbon energy behaviour**, *Workshop on Modelling Social Energy Practices*, University of Surrey, UK.
- Jun 2013 **The Pursuit of Computational Justice in Open Self-Organising Systems**, *Analytical Sociology, Social Coordination and Informatics workshop*, Stockholm, Sweden.
- Feb 2010 **Market-based mechanisms for multi-robot coordination**, *Seminar at Planning and Learning Group*, Universidad Carlos III, Madrid, Spain.
- May 2009 **Handling uncertainty in auctions and resource allocation**, *Panamagents seminar series*, LAMSADE, Université Paris Dauphine, France.
- Feb 2008 **Robust Resource Allocation**, *Seminar at Institut de Recherche en Informatique de Toulouse, France*.

Participation in PhD juries

- Dec 2012 **A satisfiability modulo theories approach to constraint programming**, *Josep Suy Franch*, Universitat de Girona, Spain.
- Dec 2012 **Modélisation, représentation et résolution de problèmes de partage équitable de biens indivisibles soumis au risque**, *Charles Lumet*, ONERA, Toulouse, France.
- Apr 2011 **A Microscopic Traffic Simulation Based Decision Support System for Real-Time Fleet Management**, *Jesús Arturo Orozco Leyva*, Universitat Politècnica de Catalunya, Spain.
- Dec 2008 **On intentional and social agents with graded attitudes**, *Ana Casali*, Universitat de Girona, Spain.
- Jun 2008 **A formalization for multi-agent decision support in cooperative environments. A framework for situated agents**, *Salvador Ibarra*, Universitat de Girona, Spain.

Publications

Journal articles

- J1. Boffill, Miquel; **Dídac Busquets**; Muñoz, Víctor, and Villaret, Mateu. Reformulation based maxsat robustness. *Constraints*, 18(2):202–235, 2013. doi: 10.1007/s10601-012-9130-2.
- J2. Pitt, Jeremy; **Dídac Busquets**, and Riveret, Régis. The pursuit of computational justice in open systems. *AI & SOCIETY*, pages 1–20, 2013. ISSN 0951-5666. doi: 10.1007/s00146-013-0531-6.
- J3. Murillo, Javier; López, Beatriz; Muñoz, Víctor, and **Dídac Busquets**. Fairness in recurrent auctions with competing markets and supply fluctuations. *Computational Intelligence*, 28:24–50, 2012. doi: 10.1111/j.1467-8640.2012.00408.x.
- J4. Murillo, Javier; Muñoz, Víctor; **Dídac Busquets**, and López, Beatriz. Schedule coordination through egalitarian recurrent multi-unit combinatorial auctions. *Applied Intelligence*, 34(1):47–63, 2011. doi: 10.1007/s10489-009-0178-7.
- J5. Murillo, Javier; **Dídac Busquets**; Dalmau, Jordi; López, Beatriz; Muñoz, Víctor, and Rodríguez-Roda, Ignasi. Improving urban wastewater management through an auction-based management of discharges. *Environmental Modelling & Software*, 26(6):689 – 696, 2011. ISSN 1364-8152. doi: 10.1016/j.envsoft.2011.01.005.
- J6. López, Beatriz; Innocenti, Bianca, and **Dídac Busquets**. A multiagent system for coordinating ambulances for emergency medical services. *IEEE Intelligent Systems*, 23(5):50 – 57, 2008. doi: 10.1109/MIS.2008.76.
- J7. Michalowski, M.; Sabanovic, S.; DiSalvo, C.; **Dídac Busquets**; Hiatt, L.; Melchior, N., and Simmons, R. Socially distributed perception: Grace plays social tag at aaai 2005. *Autonomous Robots*, 22(4):385–397, 2007. doi: 10.1007/s10514-006-9015-6.

- J8. Ambastha, M.; **Dídac Busquets**; de Màntaras, Ramon López, and Sierra, Carles. Evolving a multiagent system for landmark-based robot navigation. *International Journal of Intelligent Systems*, 20(5):523–539, 2005. doi: 10.1002/int.20079.
- J9. **Dídac Busquets**; Sierra, Carles, and de Màntaras, Ramon López. A multi-agent approach to fuzzy landmark-based navigation. *Journal of Multiple-Valued Logic and Soft Computing*, 9(2):195–220, 2003.
- J10. **Dídac Busquets**; Sierra, Carles, and de Màntaras, Ramon López. A multi-agent approach to qualitative landmark-based navigation. *Autonomous Robots*, 15(2):129–154, 2003. doi: 10.1023/A:1025536924463.

Book chapters

- Ch1. Macbeth, Sam; **Dídac Busquets**, and Pitt, Jeremy. *System Modeling: Principled Operationalisation of Social Systems Using Presage2*, page To appear. Daniele Gianni, Andrea D’Ambrogio, and Andreas Tolk edition, 2013.
- Ch2. Sanderson, David; **Dídac Busquets**, and Pitt, Jeremy. *Adaptation and Resilience of Self-Organising Electronic Institutions*, page To appear. Taylor & Francis, Niranjana Suri and Giacomo Cabri edition, 2013.

Conference papers

- C1. Petrucci, Patricio; **Dídac Busquets**, and Pitt, Jeremy. Self organising flexible demand for smart grid. In *Self-Adaptive and Self-Organizing systems*. Philadelphia, PA, USA, 2013. Demo session (Runner-up for best demo).
- C2. Pitt, Jeremy; **Dídac Busquets**, and Riveret, Regis. Procedural justice and ‘fitness for purpose’ of self-organising electronic institutions. In *Principles and Practice of Multi-Agent Systems (PRIMA)*. Dunedin, New Zealand, 2013.
- C3. Riveret, Regis; **Dídac Busquets**; Pitt, Jeremy; Contissa, Giuseppe; Rotolo, Antonino, and Sartor, Giovanni. Vicarious reinforcement and ex ante law enforcement: A study in norm-governed learning agents. In *International Conference on AI and Law*. 2013.
- C4. Sanderson, David; Pitt, Jeremy, and **Dídac Busquets**. Interactions of multiple self-adaptive mechanisms in multi-agent systems. In *ACM International Conference on Intelligent Agent Technology*. Atlanta, GA, USA, 2013 2013.
- C5. Macbeth, Sam; Pitt, Jeremy; Schaumeier, Julia, and **Dídac Busquets**. Animation of self-organising resource allocation using presage2. In *International Conference on Self-Adaptive and Self-Organizing Systems*. 2012.
- C6. Pitt, Jeremy; Schaumeier, Julia; **Dídac Busquets**, and Macbeth, Sam. Self-organising common-pool resource allocation and canons of distributive justice. In *International Conference on Self-Adaptive and Self-Organizing Systems*. 2012.
- C7. Bofill, Miquel; **Dídac Busquets**, and Villaret, Mateu. A declarative approach to robust weighted max-sat. In *Principles and Practice of Declarative Programming*, pages 67–76. Hagenberg, Austria, 2010.
- C8. Muñoz, Víctor and **Dídac Busquets**. Balancing optimality and robustness in resource allocation problems. In *Proceedings of the European Conference on Artificial Intelligence*. 2010.
- C9. Muñoz, Victor; Murillo, Javier; López, Beatriz, and **Dídac Busquets**. Strategies for exploiting trust models in competitive multiagent systems. In *German conference on Multi-Agent System Technologies*. Hamburg, 2009.

- C10. Murillo, Javier; Muñoz, Víctor; López, Beatriz, and **Dídac Busquets**. Developing strategies for the art domain. In *Conferència de la Associació Espanyola para la Intel·ligència Artificial (CAEPIA)*. Sevilla, 2009.
- C11. Muñoz, Víctor and **Dídac Busquets**. Managing risk in recurrent auctions for robust resource allocation. In *Proceedings of the Fourth Starting AI Researcher*, pages 140–150. IOS Press, IOS Press, 2008.
- C12. Muñoz, Víctor and **Dídac Busquets**. Robustness in recurrent auctions for resource allocation. In *Artificial Intelligence Research and Development (11è Congrés Català d'Intel·ligència Artificial - CCIA 2008)*, volume 184, pages 70–79. IOS Press, IOS Press, 10/2008 2008. ISBN 978-1-58603-925-7.
- C13. Murillo, Javier; Muñoz, Víctor; López, Beatriz, and **Dídac Busquets**. A fair mechanism for recurrent multi-unit auctions. In *Lecture Notes in Computer Science*, volume 5244, pages 147–158. Springer, Springer, 2008. doi: 10.1007/978-3-540-87805-6_14. Best Paper Award.
- C14. Murillo, Javier; **Dídac Busquets**; Dalmau, Jordi; López, Beatriz, and Muñoz, Víctor. Improving waste water treatment quality through an auction-based management of discharges. In *Proceedings of the iEMSs Fourth Biennial Meeting: International Congress on Environmental Modelling and Software (iEMSs 2008)*, pages 1370–1377. 2008. Best Student Paper Award.
- C15. Murillo, Javier; Muñoz, Víctor; López, Beatriz, and **Dídac Busquets**. Dynamic configurable auctions for coordinating industrial waste discharges. In *Lecture Notes in Artificial Intelligence*, volume 4687, pages 109–120. Springer, Springer, 2007. doi: 10.1007/978-3-540-74949-3_10. Proceedings of MATES 2007.
- C16. Quintero, Christian; **Dídac Busquets**; de la Rosa, Josep Lluís, and Vehi, J. Introspection on control-grounded capabilities. relevance in task allocation problems. In *Proceedings of the European Control Conference 2007*, pages 2833–2840. 2007.
- C17. Ibarra, S.; Quintero, Christian; **Dídac Busquets**; Ramon, J.; de la Rosa, Josep Lluís, and Castan, J. A. Improving the team-work in heterogeneous multi-agent systems: Situation matching approach. In *Frontiers in Artificial Intelligence and Applications - AI Research & Development (Proc. of CCIA 2006)*, pages 275–282. IOS Press, IOS Press, 2006.
- C18. Innocenti, Bianca; **Dídac Busquets**, and López, Beatriz. Coordinación del transporte sanitario basado en subasta. In *Proceedings of INFORMED*, pages 61–66. 2006.
- C19. Michalowski, M.; DiSalvo, C.; **Dídac Busquets**; Hiatt, L.; Melchior, N.; Simmons, R., and Sabanovic, S. Socially distributed perception. In *Human Robot Interaction 2006*. 2006.
- C20. **Dídac Busquets** and Simmons, R. Learning when to auction and when to bid. In *Distributed Autonomous Robotic Systems 7 (DARS 2006)*, pages 21–30. Springer-Verlag, Springer-Verlag, 2006. doi: 10.1007/4-431-35881-1_3.
- C21. Mohan, M.; **Dídac Busquets**; de Màntaras, Ramon López, and Sierra, Carles. Integrating a potential field based pilot into a multiagent navigation architecture for autonomous robots. In *Proceedings of ICINCO'04*, volume 2, pages 287–290. INSTICC Press, INSTICC Press, 2004.
- C22. **Dídac Busquets**; de Màntaras, Ramon López, and Sierra, Carles. Evolving a multiagent system for landmark-based robot navigation. In *Artificial Intelligence Research and Development (Proceedings of CCIA '03)*, pages 87–98. IOS Press, IOS Press, 2003.
- C23. Dietterich, Thomas G.; **Dídac Busquets**; de Màntaras, Ramon López, and Sierra, Carles. Action refinement in reinforcement learning by probability smoothing. In *International Conference on Machine Learning (ICML'02)*, pages 107–114. 2002.
- C24. **Dídac Busquets**; de Màntaras, Ramon López; Sierra, Carles, and Dietterich, Thomas G. Reinforcement learning for landmark-based robot navigation. In *First International Joint*

Conference on Autonomous Agents and Multiagent Systems (AAMAS 2002), pages 841–842. ACM Press, ACM Press, 2002. doi: 10.1145/544862.544938.

- C25. **Dídac Busquets**; Dietterich, Thomas G.; de Mántaras, Ramon López, and Sierra, Carles. A multi-agent architecture integrating learning and fuzzy techniques for landmark-based robot navigation. In *Topics in Artificial Intelligence*, volume 2504 of *Lecture Notes in Computer Science*, pages 269–281. Springer-Verlag, Springer-Verlag, 2002. ISBN 978-3-540-00011-2. doi: 10.1007/3-540-36079-4_24. Topics in Artificial Intelligence (Proceedings of CCIA’02).
- C26. Cortés, U.; López-Navidad, A.; Vázquez-Salceda, V.; Vázquez, S.; **Dídac Busquets**; Nicolás, M.; Lopes, S.; Vázquez, F., and Caballero, F. Carrel: An agent mediated institution for the exchange of human tissues among hospitals for transplantation. In *Seventh International Conference on Information Networks, Systems and Technologies (ICINASTE-2001)*, pages 206–213. 2001.
- C27. **Dídac Busquets**; de Mántaras, Ramon López, and Sierra, Carles. A robust mas coordination mechanism for action selection. In *AAAI Spring Symposium, Robust Autonomy Serie*, pages 38–40. 2001.
- C28. Cortés, U.; López-Navidad, A.; Vázquez-Salceda, V.; S., Vázquez; **Dídac Busquets**; Nicolás, M.; Lopes, S.; Vázquez, F., and Caballero, F. Uctx: A multi-agent approach to model a transplant coordination unit. In *3r Congrés Català d’Intel·ligència Artificial (CCIA 2000)*, volume 22, pages 23–28. 2000.
- C29. Sierra, Carles; de Mántaras, Ramon López, and **Dídac Busquets**. Multiagent bidding mechanisms for robot qualitative navigation. In *Lecture Notes in Artificial Intelligence*, volume 1986, pages 198–212. 2000. doi: 10.1007/3-540-44631-1_14. Intelligent Agents VII.

Workshop papers

- W1. Holland, Stuart; Pitt, Jeremy; Sanderson, David, and **Dídac Busquets**. Reasoning and reflection in the game of nomic: Self-organising self-aware agents with mutable rule-sets. In *AWARENESS workshop @SASO 2013*. Philadelphia, PA, USA, 2013 2013.
- W2. Sanderson, David; **Dídac Busquets**, and Pitt, Jeremy. A micro-meso-macro approach to intelligent transportation systems. In *Workshop on Technologies for the Organisation, Adaptation and Simulation of Transportation Systems (SASO 2012)*. 2012.
- W3. **Dídac Busquets** and Pitt, Jeremy. Management of re-usable, durable and time-constrained common pool resources. In *European Workshop on Multi-Agent Systems (EUMAS)*. 2012.
- W4. Bofill, Miquel; **Dídac Busquets**, and Villaret, Mateu. Auction robustness through satisfiability modulo theories. In *Workshop on Agreement Technologies (WAT - CAEPIA)*. Sevilla, 2009.
- W5. Muñoz, Víctor; Murillo, Javier; **Dídac Busquets**, and López, Beatriz. Improving water quality by coordinating industries schedules and treatment plants. In *AAMAS workshop on Coordinating Agents Plans ans Schedules (CAPS)*. 2007.
- W6. Murillo, Javier; Muñoz, Víctor; **Dídac Busquets**, and López, Beatriz. Coordinating agents schedules through auction mechanisms. In *CAEPIA’s workshop on Planning, Scheduling and Constraint Satisfaction*, pages 105–114. 2007.
- W7. Gockley, R.; Simmons, R.; Wang, J.; **Dídac Busquets**; DiSalvo, C.; Caffrey, Ke.; Rosenthal, S.; Mink, J.; Thomas, S.; Adams, W.; Lauducci, T.; Bugajska, M.; Perzanowski, D., and Schultz, A. Grace and george: Social robots at aai. In *Proceedings of AAAI’04. Mobile Robot Competition Workshop (Technical Report WS-04-11)*, pages 15–20. AAAI Press, AAAI Press, 2004.

PhD thesis

- PhD1. **Dídac Busquets**. *A Multiagent Approach to Qualitative Navigation in Robotics*. Ph.D. thesis, Technical University of Catalonia, 2003. Also published as the book “Monografies de l’IIIA” (Vol. 18, ISBN 84-00-08155-2).