

Dr. Álvaro Torralba

Saarland University
Heidenkopferdell 2
Saarbrücken 66123 Germany

Phone: +34 665 36 25 80

Email: torralba@cs.uni-saarland.de

WEB : <http://fai.cs.uni-saarland.de/torralba/>

Born : September 10, 1985 — Madrid, Spain

Current position

Post-Doc, Saarland University

Areas of specialization

Artificial Intelligence, Automated Planning, Heuristic Search

Selected Publications

- Á. Torralba and P. Kissmann, *Focusing on What Really Matters: Irrelevance Pruning in Merge-and-Shrink*, Proceedings of the 8th Symposium on Combinatorial Search (SOCS'15).
- Á. Torralba and J. Hoffmann, *Simulation-Based Admissible Dominance Pruning*, Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI'15).
- Á. Torralba, V. Alcázar *Constrained Symbolic Search: On Mutexes, BDD Minimization and More*, Proceedings of the 6th Symposium on Combinatorial Search (SOCS'13).
- Á. Torralba, C. Linares López, D. Borrajo, *Symbolic Merge-and-Shrink for Cost-Optimal Planning*, Proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI'13).

Qualifications

- 2015 Promotion to Dr. at Universidad Carlos III de Madrid, Spain.
“Symbolic Search and Abstraction Heuristics for Cost-Optimal Planning”.
Supervisors: Prof. Daniel Borrajo and Prof. Carlos Linares López.
Final grade: “cum laude”.
- 2010 Master in Computer Science and Technology.
Universidad Carlos III de Madrid
- 2009 Diploma in Computer Science Engineering.
Universidad Carlos III de Madrid

Awards

- 2015 **Best Paper Award at the 8th Symposium on Combinatorial Search (SoCS’15)**. For the paper *Focusing on What Really Matters: Irrelevance Pruning in Merge-and-Shrink*, co-authored with Peter Kissmann.
- 2014 Developer of the *SymBA*^{*}-2 planner, **winner of the sequential-optimal track of the 8th international planning competition (IPC’14)**. (joint work with Vidal Alcázar, Peter Kissmann, Stefan Edelkamp, and Daniel Borrajo)
- 2014 Developer of the *cGamer* planner, **runner-up of the sequential-optimal track of the 8th international planning competition (IPC’14)**. (joint work with Vidal Alcázar, Peter Kissmann, and Stefan Edelkamp)
- 2013 **Best Paper Award at the 6th Symposium on Combinatorial Search (SoCS’13)**. For the paper *Constrained Symbolic Search: On Mutexes, BDD Minimization and More*, co-authored with Vidal Alcázar.

Positions

- 2014 – now Researcher at Saarland University, Saarbrücken, Germany.
- 2010 – 2014 P.h.D. student, funded member of graduate school at Universidad Carlos III de Madrid.
- 2009 – 2010 Technical support for research at Universidad Carlos III de Madrid.

Visits

- 2012 3 months visit to Stefan Edelkamp in Universität Bremen, Germany.

Teaching

Main Lectures and Seminars

- 2015 – 2016 *Automatic Planning*, Specialized Lecture in Artificial Intelligence, Saarland University. (co-lectured with Jörg Hoffmann)
- 2015 – 2016 *Admissible Search Enhancements*, Seminar, Saarland University. (co-lectured with Jörg Hoffmann, Daniel Gnad, and Marcel Steinmetz)
- 2015 *Heuristic Search for MDPs*, Seminar, Saarland University. (co-lectured with Jörg Hoffmann and Peter Kissmann)
- 2014 – 2015 *Heuristic Search for MDPs*, Seminar, Saarland University. (co-lectured with Jörg Hoffmann and Peter Kissmann)
- 2014 *Planning and Learning*, Seminar, Saarland University. (co-lectured with Jörg Hoffmann and Peter Kissmann)

Teaching Assisant

- 2015 *Artificial Intelligence*, Core Lecture, Saarland University. (co-assistant with Daniel Gnad, Marcel Steinmetz and student tutors)
- 2014 – 2015 *Automatic Planning*, Specialized Lecture in Artificial Intelligence, Saarland University. (co-assistant with Peter Kissmann and Daniel Gnad)
- 2014 *Artificial Intelligence*, Core Lecture, Saarland University. (co-assistant with Peter Kissmann and student tutors)
- 2013 – 2014 *Heuristic Search and Optimization*, Core Lecture, Universidad Carlos III de Madrid. (co-assistant with Jesús Virseda)
- 2012 – 2013 *Heuristic Search and Optimization*, Core Lecture, Universidad Carlos III de Madrid. (co-assistant with Vidal Alcázar)
- 2011 – 2012 *Heuristic Search and Optimization*, Core Lecture, Universidad Carlos III de Madrid. (co-assistant with Vidal Alcázar)
- 2010 – 2011 *Programming*, Core Lecture, Universidad Carlos III de Madrid.

Supervision of Master Thesis

- 2015 *Fork-Decoupled FOND Planning* by Robin Wagner (co-supervised with Jörg Hoffmann and Daniel Gnad), Saarland University.

Supervision of Bachelor Thesis

- 2015 *When a Sentence falls apart. . . Using heuristically guided dead end detection in sentence realization* by Maximilian Schwenger (co-supervised with Jörg Hoffmann, David Howcraft and Vera Demberg), Saarland University.
- 2015 *Dominance Pruning Methods for Fork-Decoupled Search* by Patrick Dubbert (co-supervised with Jörg Hoffmann and Daniel Gnad), Saarland University.
- 2015 *Search Algorithms and Determinization Heuristics in Simulated Pentesting* by Luise Odenthal (co-supervised with Jörg Hoffmann), Saarland University.
- 2014 *Learning Pattern Collections* by Maike Maas (co-supervised with Jörg Hoffmann), Saarland University.
- 2014 *Exploiting Portfolios in the Usage of Learned Pruning Rules for Heuristic Search Planning* by Valerie Poser (co-supervised with Jörg Hoffmann and Olivier Buffet), Saarland University.
- 2014 *Understanding the Learning and Usage of Pruning Rules for Heuristic Search Planning* by Inken Hagestedt (co-supervised with Jörg Hoffmann, Alan Fern, and Olivier Buffet), Saarland University.
- 2014 *Analizador de posiciones del tablero del Go* by Javier Huertas Tato (co-supervised with Daniel Borrajo), Universidad Carlos III de Madrid.
- 2013 *Jaminion: Plataforma de Dominion* by Sergio Durán Vegas, Universidad Carlos III de Madrid.

Scientific Activities: Reviewing

Journals:

- Artificial Intelligence
- AI Communications

Conferences:

- Program Committee of the *26th International Conference on Automated Planning and Scheduling (ICAPS'16)*.
- Program Committee of the *8th Symposium on Combinatorial Search (SOCS'15)*.

- Program Committee of the *24th International Joint Conference on Artificial Intelligence (IJCAI'15)*.
- Program Committee of the *29th AAAI Conference on Artificial Intelligence (AAAI'15)*.
- Program Committee of the *7th Symposium on Combinatorial Search (SOCS'14)*.
- Additional Reviewer of the *25th International Conference on Automated Planning and Scheduling (ICAPS'15)*.
- Additional Reviewer of the *24th International Conference on Automated Planning and Scheduling (ICAPS'14)*.
- Additional Reviewer of the *6th Symposium on Combinatorial Search (SOCS'13)*.
- Additional Reviewer of the *5th Symposium on Combinatorial Search (SOCS'12)*.

Publications

Journal Articles

1. V. Demberg, J. Hoffmann, D. Howcroft, D. Klakow, and Á. Torralba, *Search Challenges in Natural Language Generation with Complex Optimization Objectives*, Kuenstliche Intelligenz, 2015.
2. J. García, J. E. Flórez, Á. Torralba, D. Borrajo C. Linares López, A. García Olaya and J. Sáenz, *Combining linear programming and automated planning to solve inter-modal transportation problems*, European Journal of Operational Research, 2013

Conference Papers

3. Á. Torralba and P. Kissmann, *Focusing on What Really Matters: Irrelevance Pruning in Merge-and-Shrink*, Proceedings of the 8th Symposium on Combinatorial Search (SOCS'15).
4. Á. Torralba and J. Hoffmann, *Simulation-Based Admissible Dominance Pruning*, Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI'15).
5. V. Alcázar and Á. Torralba, *A Reminder about the Importance of Computing and Exploiting Invariants in Planning*, Proceedings of the 25th International Conference on Automated Planning and Scheduling (ICAPS'15).
6. S. Edelkamp, P. Kissmann and Á. Torralba, *BDDs Strike Back (in AI Planning)*, Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI'15).

7. J. Hoffmann, P. Kissmann, and Á. Torralba, “Distance”? Who Cares? Tailoring Merge-and-Shrink Heuristics to Detect Unsolvability, Proceedings of the 21st European Conference on Artificial Intelligence (ECAI’14).
8. Á. Torralba, V. Alcázar *Constrained Symbolic Search: On Mutexes, BDD Minimization and More*, Proceedings of the 6th Symposium on Combinatorial Search (SOCS’13).
9. Á. Torralba, C. Linares López, D. Borrajo, *Symbolic Merge-and-Shrink for Cost-Optimal Planning*, Proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI’13).
10. Á. Torralba, S. Edelkamp, P. Kissmann *Transition Trees for Cost-Optimal Symbolic Planning*, Proceedings of the 23rd International Conference on Automated Planning and Scheduling (ICAPS’13).
11. S. Edelkamp, P. Kissmann, Á. Torralba *Symbolic A* Search with Pattern Databases and the Merge-and-Shrink Abstraction* Proceedings of the 20th European Conference on Artificial Intelligence (ECAI’12).
12. Á. Parra, Á. Torralba, C. Linares López, *Precomputed-Direction Heuristics for Sub-optimal Grid-Based Path-finding*, Proceedings of the 5th Symposium on Combinatorial Search (SOCS’12).
13. J. E. Flórez, Á. Torralba, J. García, C. Linares López, A. García Olaya, D. Borrajo, *Planning Multi-Modal Transportation Problems*, Proceedings of the 21st International Conference on Automated Planning and Scheduling (ICAPS’11).
14. Á. Torralba, C. Linares López, *Size-Independent Additive Pattern Databases for the Pancake Problem*, Proceedings of the 4th Symposium on Combinatorial Search (SOCS’11).

Workshop Papers

15. A. Torralba and J. Hoffmann, *Simulation-Based Admissible Dominance Pruning*, Proceedings of the 7th Workshop on Heuristic Search for Domain-Independent Planning (HSDIP’15).
16. J. Hoffmann, P. Kissmann, and A. Torralba, “Distance”? Who Cares? Tailoring Merge-and-Shrink Heuristics to Detect Unsolvability, Proceedings of the 6th Workshop on Heuristic Search for Domain-Independent Planning (HSDIP’14).
17. S. Edelkamp, P. Kissmann, Á. Torralba, *Lex-Partitioning: A New Option for BDD Search*, First Workshop on GRAPH Inspection and Traversal Engineering, GRAPHITE 2012.