

# Felipe Trevizan

## Curriculum Vitae

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📍 Australian National University  
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### Research Interests

My research interests lie at the **intersection of Artificial Intelligence, Operations Research and Machine Learning** including *automated planning and scheduling, planning under uncertainty and heuristic search*.

### Education

- 2013 Ph.D. **Carnegie Mellon University** (Pittsburgh, USA)  
*Thesis: Short-Sighted Probabilistic Planning*  
*Supervisor: Manuela Veloso*
- 2010 M.Sc. **Carnegie Mellon University** (Pittsburgh, USA)  
*Thesis: Learning Opponent's Strategies in the RoboCup*  
*Supervisor: Manuela Veloso*
- 2006 M.Sc. **São Paulo University** (São Paulo, Brazil)  
*Thesis: An Unified Model for Planning under Uncertainty*  
*Supervisor: Leliane Nunes de Barros*
- 2004 B.Sc. **São Paulo University** (São Paulo, Brazil)  
*Thesis: Cognitive Robotics: an Application of Planning with Incomplete Information*  
*Supervisor: Leliane Nunes de Barros*

### Employment

School of Computing, Australian National University (Canberra, Australia)

2021/Jan – *current* **Senior Lecturer**

2018/May – 2020/Dec **Lecturer**

Machine Learning Research Group, NICTA (now Data61/CSIRO) (Canberra, Australia)

2017/Aug – 2018/Apr **Senior Research Scientist**

2014/Jun – 2017/Aug **Research Scientist**

Department of Computer Science, São Paulo University (São Paulo, Brazil)

2013/Sep – 2014/Jun **Postdoctoral Fellow**

Google (USA)

2011/May – 2011/Sep **Summer Intern** (Seattle, USA)

2010/May – 2010/Aug **Summer Intern** (Pittsburgh, USA)

### Honours, Awards and Career Highlights

2020 **Early Career Researcher Spotlight** presentation on the 29th International Joint Conference on Artificial Intelligence (IJCAI).

2017 **Best Paper Award** at the 27th International Conference on Automated Planning and Scheduling (ICAPS).

2016 **Best Paper Award** at the 26th International Conference on Automated Planning and Scheduling (ICAPS).

2016 **Best Paper Award** from the Artificial Intelligence committee of the Transport Research Board (TRB).

2006 **Best Paper Award** at the 10th Ibero-American Conference on Artificial Intelligence (IBERAMIA).

## Teaching Experience

- 2024/Feb–Jun **Structured Programming** (COMP1110/6710). *Co-Convenor*. **318 students** (136 undergraduates and 182 graduates). Australian National University.
- 2023/Jul–Nov **Optimization** (COMP4691/8691). *Convenor*. **40 students** (27 undergraduates and 13 graduates). Australian National University.
- 2022/Feb–Jun **Artificial Intelligence** (COMP3620/6320). *Convenor*. **143 students** (65 undergraduates and 78 graduates). Australian National University.
- 2021/Feb–Jun **Artificial Intelligence** (COMP3620/6320). *Convenor*. **193 students** (129 undergraduates and 64 graduates). Australian National University.
- 2020/Feb–Jun **Artificial Intelligence** (COMP3620/6320). *Convenor*. **158 students** (97 undergraduates and 61 graduates). Australian National University.
- 2019/Feb–Jun **Artificial Intelligence** (COMP3620/6320). *Convenor*. **189 students** (144 undergraduates and 75 graduates). Australian National University.
- Responsibilities: deliver lectures, material renewals and development (e.g., lectures, assignments, quizzes, tutorials and exams) and adaptation for online-only teaching (COVID-19).

## Publications

In my research field, conference papers are as important as journal articles and the author ordering is based on the author's contributions except by publications marked as last name alphabetical ordering.

### Peer-Reviewed Journals Papers

- J1. Toyer, S., Thiébaux, S., **Trevizan, F.** and Xie, L. (2020) ASNets: Deep Learning for Generalised Planning. In *Journal of Artificial Intelligence*, pp. 68: 1–68.
- J2. Guilliard, I., **Trevizan, F.** and Sanner, S. (2020) Mitigating the Impact of Light Rail on Urban Traffic Networks using Mixed Integer Linear Programming. In *IET Intelligent Transport Systems*, pp. 14 (6): 523–533.
- J3. Guilliard, I., Sanner, S., **Trevizan, F.** and Williams, B. (2016) Nonhomogeneous Time Mixed Integer Linear Programming Formulation for Traffic Signal Control. In *Transport Research Record (TRR): Journal of the Transport Research Board*, pp. 128–138.
- J4. Santos, F., Barros, L. N. and **Trevizan, F.** (2015) Reachability-based Model Reduction for Markov Decision Process. In *Journal of the Brazilian Computer Society*, pp. 1265: 5–21.
- J5. **Trevizan, F.** and Veloso, M. (2014) Depth-based Short-sighted Stochastic Shortest Path Problems. In *Artificial Intelligence*, pp. 216: 179–205.
- J6. **Trevizan, F.** and Barros, L. N. (2006) Robótica Cognitiva: programação baseada em lógica para controle de robôs. In *Controle & Automação*, pp. 18 (2): 187–198.
- J7. **Trevizan, F.**, Barros, L. N. and Correa da Silva, F. S. (2006) Designing Logic-based Robots. In *Inteligencia Artificial, Revista Iberoamericana de Inteligencia Artificial*, pp. 10: 11–22.

### Peer-Reviewed Conferences Papers

- C1. Hao, M., **Trevizan, F.**, Thiébaux, S., Ferber, P. and Hoffmann, J. (2024) Guiding GBFS through Learned Pairwise Rankings. In *Proc. of 33rd Int. Joint Conf. on AI (IJCAI)*.
- C2. Chen, D., **Trevizan, F.** and Thiébaux, S. (2024) Return to Tradition: Learning Reliable Heuristics with Classical Machine Learning. In *Proc. of 34th Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 68–76.
- C3. Chen, D., Thiébaux, S. and **Trevizan, F.** (2024) Learning Domain-Independent Heuristics for Grounded and Lifted Planning. In *Proc. of 38th AAAI Conference on Artificial Intelligence*, pp. 20078–20086.
- C4. Schmalz, J. and **Trevizan, F.** (2024) Efficient Constraint Generation for Stochastic Shortest Path Problems. In *Proc. of 38th AAAI Conference on Artificial Intelligence*, pp. 20247–20255.
- C5. Schmalz, J. and **Trevizan, F.** (2024) Finding Optimal Deterministic Policies for Constrained Stochastic Shortest Path Problems. In *Proc. of 27th European Conference on Artificial Intelligence (ECAI)*.
- C6. Chen, D., **Trevizan, F.** and Thiébaux, S. (2023) Heuristic Search for Multi-Objective Probabilistic Planning. In *Proc. of 37th AAAI Conference on Artificial Intelligence*, pp. 11945–11954.
- C7. Geisser, F., Haslum, P., Thiébaux, S. and **Trevizan, F.** (2022) Admissible Heuristics for Multi-Objective Planning. In *Proc. of 32nd Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 100–109. (Last name alphabetical ordering)

- C8. Ferber, P., Geisser, F., **Trevizan, F.**, Helmert, M. and Hoffmann, J. (2022) Neural Network Heuristic Functions for Classical Planning: Bootstrapping and Comparison to Other Methods. In *Proc. of 32nd Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 583–587.
- C9. Mallet, I., Thiébaux, S. and **Trevizan, F.** (2021) Progression Heuristics for Planning with Probabilistic LTL Constraints. In *Proc. of 35th AAAI Conference on Artificial Intelligence*, pp. 11870–11879.
- C10. Shen, W., **Trevizan, F.** and Thiébaux, S. (2020) Domain-Independent Planning Heuristics with Hypergraph Networks. In *Proc. of 30th Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 574–584.
- C11. Geisser, F., Poveda, G., **Trevizan, F.**, Bondouy, M., Teichteil-Königsbuch, F. and Thiébaux, S. (2020) Optimal and Heuristic Approaches for Constrained Flight Planning under Weather Uncertainty. In *Proc. of 30th Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 384–393.
- C12. Shen, W., **Trevizan, F.**, Toyer, S., Thiébaux, S. and Xie, L. (2019) Guiding Search with Generalized Policies for Probabilistic Planning. In *Proc. of 12th Annual Symp. on Combinatorial Search (SoCS)*, pp. 97–105.
- C13. Baumgartner, P., Thiébaux, S. and **Trevizan, F.** (2018) Heuristic Search Planning With Multi-Objective Probabilistic LTL Constraints. In *Proc. of 16th Int. Conf. on Principles of Knowledge Representation and Reasoning (KR)*, pp. 415–424. (Last name alphabetical ordering)
- C14. Toyer, S., **Trevizan, F.**, Thiébaux, S. and Xie, L. (2018) Action Schema Networks: Generalised Policies with Deep Learning. In *Proc. of 32nd AAAI Conference on Artificial Intelligence*, pp. 6294–6301.
- C15. **Trevizan, F.**, Thiébaux, S. and Haslum, P. (2018) Operator Counting Heuristics for Probabilistic Planning. In *Proc. of 27th Int. Joint Conf. on AI (IJCAI)– Sister Conference Best Paper Track*, pp. 5384–5388.
- C16. **Trevizan, F.**, Thiébaux, S. and Haslum, P. (2017) Occupation Measure Heuristics for Probabilistic Planning. In *Proc. of 27th Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 306–315. **Best Paper Award.**
- C17. **Trevizan, F.**, Teichteil-Königsbuch, F. and Thiébaux, S. (2017) Efficient Solutions for Stochastic Shortest Path Problems with Dead Ends. In *Proc. of 33rd Int. Conf. on Uncertainty in Artificial Intelligence (UAI)*.
- C18. Baumgartner, P., Thiébaux, S. and **Trevizan, F.** (2017) Tableaux for Policy Synthesis for MDPs with PCTL\* Constraints. In *Proc. of 26th Int. Conf. on Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX)*, pp. 175–192.
- C19. **Trevizan, F.**, Thiébaux, S., Santana, P. and Williams, B. (2017) I-dual: Solving Constrained SSPs via Heuristic Search in the Dual Space. In *Proc. of 26th Int. Joint Conf. on AI (IJCAI)– Sister Conference Best Paper Track*, pp. 4954–4958.
- C20. **Trevizan, F.**, Thiébaux, S., Santana, P. and Williams, B. (2016) Heuristic Search in Dual Space for Constrained Stochastic Shortest Path Problems. In *Proc. of 26th Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 326–334. **Best Paper Award.**
- C21. **Trevizan, F.** and Veloso, M. (2013) Finding Objects through Stochastic Shortest Path Problems. In *Proc. of 12nd Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS)*, pp. 547–554.
- C22. **Trevizan, F.** and Veloso, M. (2012) Trajectory-Based Short-Sighted Probabilistic Planning. In *Advances in Neural Information Processing Systems (NIPS)*, pp. 3257–3265.
- C23. **Trevizan, F.** and Veloso, M. (2012) Short-Sighted Stochastic Shortest Path Problems. In *Proc. of 22nd Int. Conf. on Automated Planning and Scheduling (ICAPS)*, pp. 288–296.
- C24. Shirota Filho, R., Cozman, F. G., **Trevizan, F.**, de Campos, C. P. and Barros, L. N. (2007) Multilinear and Integer Programming for Markov Decision Processes with Imprecise Probabilities. In *Proc. of 5th Int. Symposium On Imprecise Probability: Theories And Applications*, pp. 395–404.
- C25. **Trevizan, F.**, Cozman, F. G. and Barros, L. N. (2007) Planning under Risk and Knightian Uncertainty. In *Proc. of 20th Int. Joint Conf. on AI (IJCAI)*, pp. 2023–2028.
- C26. **Trevizan, F.**, Cozman, F. G. and Barros, L. N. (2006) Unifying Nondeterministic and Probabilistic Planning through Imprecise Markov Decision Processes. In *Proc. of 10th Ibero-American Conf. on AI (IBERAMIA) and 18th Brazilian AI Symposium (SBIA)*, pp. 4140: 502–511. **Best Paper Award.**
- C27. **Trevizan, F.**, Barros, L. N. and Correa da Silva, F. S. (2005) Low Cost Experiments in Cognitive Robotics for Planning in Hostile Environments with Incomplete Information. In *Proc. of 11th Conf. of the Spanish Association for Artificial Intelligence (CAEPIA)*, pp. 2: 131–140.
- C28. **Trevizan, F.** and Barros, L. N. (2005) Robótica Cognitiva: uma aplicação de planejamento com informação incompleta. In *Proc. of 7th Simpósio Brasileiro de Automação Inteligente (SBAI)*.

### Peer-Reviewed Workshop Papers

- W1. Chen, D., **Trevizan, F.** and Thiébaux, S. (2023) Graph Neural Networks and Graph Kernels For Learning Heuristics: Is there a difference?. In *Proc. of NeurIPS'23 Workshop on Generalization in Planning (GenPlan23)*.
- W2. Chen, D., Thiébaux, S. and **Trevizan, F.** (2023) GOOSE: Learning Domain-Independent Heuristics. In *Proc. of NeurIPS'23 Workshop on Generalization in Planning (GenPlan23)*.

- W3. Ferber, P., Geisser, F., **Trevizan, F.**, Helmert, M. and Hoffmann, J. (2021) Neural Network Heuristic Functions for Classical Planning: Reinforcement Learning and Comparison to Other Methods. In *Proc. of ICAPS'21 Workshop on Planning and Reinforcement Learning (PRL21)*.
- W4. Mallet, I., Hoerger, M., Gupta, S., Jayalath, N., **Trevizan, F.**, Hunt, A., Kurniawati, H. and Guettier, C. (2021) SM2P: Towards a Robust Co-Pilot System for Helicopter EMS. In *Proc. of ICAPS'21 Workshop on Planning and Robotics (PlanRob21)*.
- W5. Shen, W., **Trevizan, F.** and Thiébaux, S. (2020) Learning Delete-Relaxation Heuristics over Hypergraphs. In *Proc. of AAAI'20 Workshop on Generalization in Planning (GenPlan20)*.
- W6. Shen, W., **Trevizan, F.**, Toyer, S., Thiébaux, S. and Xie, L. (2019) Guiding MCTS with Generalized Policies for Probabilistic Planning. In *Proc. of ICAPS'19 Workshop on Heuristics and Search for Domain-independent Planning (HSDIP)*.
- W7. **Trevizan, F.** and Veloso, M. (2010) Learning Opponent's Strategies in the RoboCup Small-Size League. In *Proc. of AAMAS'10 Workshop on Agents in Real-time and Dynamic Environments*.
- W8. **Trevizan, F.**, Cozman, F. G. and Barros, L. N. (2008) Mixed Probabilistic and Nondeterministic Factored Planning through Markov Decision Processes with Set-valued Transitions. In *Proc. of ICAPS'08 Workshop on A Reality Check for Planning and Scheduling Under Uncertainty*.

### Invited Talks (selected)

- 2023/Sep **Keynote presentation at the 12th Brazilian Conference on Intelligent Systems.** Title: Planning under Uncertainty: new results and applications. (Belo Horizonte, Brazil).
- 2023/Feb **J.P. Morgan AI Research.** Title: Deep Learning for Automated Planning. (New York, USA).
- 2021/Jan **Early Career Researcher Spotlight presentation on the 29th International Joint Conference on Artificial Intelligence (IJCAI).** Title: Handling Constraints in Probabilistic Planning: Problems, Algorithms, and Heuristics. (Yokohama, Japan).
- 2019/Jul **Tutorial at the Third Cognitive Robotics Summer School.** Title: Planning Under Uncertainty. (Los Angeles, USA).
- 2018/Jun **Keynote presentation at the Planning, Search and Optimization Workshop (ICAPS).** Title: Occupation Measures: how OR can help Planning under Uncertainty. (Delft, Netherlands).
- 2017/Jun **Microsoft Research.** Title: Negotiating Mission Plans under Risk Bounds. (Seattle, USA).
- 2016/Jul **King's College.** Title: Queue Transmission Model. (London, UK).
- 2016/Jun **Google DeepMind.** Title: Heuristic Search in Dual Space for Constrained Stochastic Shortest Path Problems. (London, UK).