

Recent Publications (2021–2025)

The *full list* can be found here. See also dblp, Google Scholar, ResearchGate, and Semantic Scholar.

Journal Articles and Book Chapters

2022

- Stefan Borgwardt, Walter Forkel, and Alisa Kovtunova. Temporal minimal-world query answering over sparse ABoxes. *Theory and Practice of Logic Programming*, 22(2):192–228, March 2022.
doi:10.1017/S1471068421000119

Peer-Reviewed Conference Publications

2025

- Franz Baader, Stefan Borgwardt, Filippo De Bortoli, and Patrick Koopmann. Concrete domains meet expressive cardinality restrictions in description logics. In Clark Barrett and Uwe Waldmann, editors, *Proceedings of the 30th International Conference on Automated Deduction (CADE'25)*, *Lecture Notes in Computer Science*, Stuttgart, Germany, July 28, 2025. Springer-Verlag. To appear.

2024

- Christian Alrabbaa, Stefan Borgwardt, Tom Friese, Anke Hirsch, Nina Knieriemen, Patrick Koopmann, Alisa Kovtunova, Antonio Krüger, Alexej Popovič, and Ida Siahaan. Explaining reasoning results for OWL ontologies with Eevee. In Pierre Marquis, Magdalena Ortiz, and Maurice Pagnucco, editors, *21st International Conference on Knowledge Representation and Reasoning (KR'24)*, pages 709–719, Hanoi, Vietnam, November 2, 2024. IJCAI. KR in the Wild track.
doi:10.24963/kr.2024/67

2023

- Christian Alrabbaa, Franz Baader, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Combining proofs for description logic and concrete domain reasoning. In Anna Fensel and Ana Ozaki, editors, *Proceedings of the 7th International Joint Conference on Rules and Reasoning (RuleML+RR'23)*, volume 14244 of *Lecture Notes in Computer Science*, pages 54–69, Oslo, Norway, September 18, 2023. Springer-Verlag. **Harold Boley Distinguished Paper Award.**
doi:10.1007/978-3-031-45072-3_4
Extended version: <https://arxiv.org/abs/2308.03705>

2022

- Christian Alrabbaa, Stefan Borgwardt, Anke Hirsch, Nina Knieriemen, Alisa Kovtunova, Anna Milena Rothermel, and Frederik Wiehr. In the head of the beholder: Comparing different proof representations. In Guido Governatori and Anni-Yasmin Turhan, editors, *Proceedings of the 6th International Joint Conference on Rules and Reasoning (RuleML+RR'22)*, volume 13752 of *Lecture Notes in Computer Science*, pages 211–226, Online [Berlin, Germany], September 26, 2022. Springer-Verlag. **Best Paper Award**. doi:10.1007/978-3-031-21541-4_14
- Christian Alrabbaa, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Explaining ontology-mediated query answers using proofs over universal models. In Guido Governatori and Anni-Yasmin Turhan, editors, *Proceedings of the 6th International Joint Conference on Rules and Reasoning (RuleML+RR'22)*, volume 13752 of *Lecture Notes in Computer Science*, pages 167–182, Online [Berlin, Germany], September 26, 2022. Springer-Verlag. doi:10.1007/978-3-031-21541-4_11
Extended version: <https://arxiv.org/abs/2208.14381>
- Christian Alrabbaa, Franz Baader, Stefan Borgwardt, Raimund Dachselt, Patrick Koopmann, and Julián Méndez. Evonne: Interactive proof visualization for description logics (System description). In Jasmin Blanchette, Laura Kovács, and Dirk Pattinson, editors, *Proceedings of the 11th International Joint Conference on Automated Reasoning (IJCAR'22)*, volume 13385 of *Lecture Notes in Computer Science*, pages 271–280, Haifa, Israel, August 8, 2022. Springer-Verlag. doi:10.1007/978-3-031-10769-6_16
Extended version: <https://arxiv.org/abs/2205.09583>
- Ernie Chang, Alisa Kovtunova, Stefan Borgwardt, Vera Demberg, Kathryn Chapman, and Hui-Syuan Yeh. Logic-guided message generation from raw real-time sensor data. In Nicoletta Calzolari, Frédéric Béchet, Philippe Blache, Khalid Choukri, Christopher Cieri, Thierry Declerck, Sara Goggi, Hitoshi Isahara, Bente Maegaard, Joseph Mariani, Hélène Mazo, Jan Odijk, and Stelios Piperidis, editors, *Proceedings of the 13th Language Resources and Evaluation Conference (LREC'22)*, pages 6899–6908, Marseille, France, June 21, 2022. European Language Resources Association. <http://www.lrec-conf.org/proceedings/lrec2022/pdf/2022.lrec-1.745.pdf>
- Stefan Borgwardt, Jörg Hoffmann, Alisa Kovtunova, Markus Krötzsch, Bernhard Nebel, and Marcel Steinmetz. Expressivity of planning with Horn description logic ontologies. In Katia Sycara, Vasant Honavar, and Matthijs Spaan, editors, *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI'22)*, pages 5503–5511, Online [Vancouver, Canada], February 22, 2022. AAAI Press. doi:10.1609/aaai.v36i5.20489
- Marcel Steinmetz, Jörg Hoffmann, Alisa Kovtunova, and Stefan Borgwardt. Classical planning with avoid conditions. In Katia Sycara, Vasant Honavar, and Matthijs Spaan, editors, *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI'22)*, pages 9944–9952, Online [Vancouver, Canada], February 22, 2022. AAAI Press. doi:10.1609/aaai.v36i9.21232
Extended version: https://fai.cs.uni-saarland.de/steinmetz/aaai22_tr.pdf

2021

- Stefan Borgwardt, Jörg Hoffmann, Alisa Kovtunova, and Marcel Steinmetz. Making DL-Lite planning practical. In Meghyn Bienvenu and Gerhard Lakemeyer, editors, *Proceedings of the 18th International Conference on Principles of Knowledge Representation and Reasoning (KR'21)*, pages 641–645, Online [Hanoi, Vietnam], November 8, 2021. IJ-CAI. Short paper.
doi:10.24963/kr.2021/61
- Frederik Wiehr, Anke Hirsch, Lukas Schmitz, Nina Knieriemen, Alisa Kovtunova, Stefan Borgwardt, Ernie Chang, Vera Demberg, Marcel Steinmetz, Jörg Hoffmann, and Antonio Krüger. Why do I have to take over control? Evaluating safe handovers with advance notice and explanations in highly automated driving. In Sharon Oviatt, Albert Ali Salah, and Guoying Zhao, editors, *Proceedings of the 23rd ACM International Conference on Multimodal Interaction (ICMI'21)*, pages 308–317, Montreal, Canada, October 18, 2021. ACM.
doi:10.1145/3462244.3479884
- Christian Alrabbaa, Franz Baader, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Finding good proofs for description logic entailments using recursive quality measures. In André Platzer and Geoff Sutcliffe, editors, *Proceedings of the 28th International Conference on Automated Deduction (CADE'21)*, volume 12699 of *Lecture Notes in Computer Science*, pages 291–308, Online, July 12, 2021. Springer-Verlag.
doi:10.1007/978-3-030-79876-5_17
Extended version: <https://arxiv.org/abs/2104.13138>

Workshop, Video, and Other Publications

2024

- Christian Alrabbaa, Stefan Borgwardt, Tom Frieze, Anke Hirsch, Nina Knieriemen, Patrick Koopmann, Alisa Kovtunova, Antonio Krüger, Alexej Popovič, and Ida Siahaan. Explaining reasoning results for OWL ontologies with Eevee (Extended abstract). In Nico Potyka, editor, *Proceedings of the 5th Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'24)*, Hanoi, Vietnam, November 2, 2024.
<https://sites.google.com/view/xlokr2024>
Extended version: doi:10.24963/kr.2024/67
- Christian Alrabbaa, Stefan Borgwardt, Tom Frieze, Patrick Koopmann, Alisa Kovtunova, and Ida Siahaan. Explaining description logic reasoning slice by slice with Eevee. In Nico Potyka and Anni-Yasmin Turhan, editors, *Video Track of the 21st International Conference on Knowledge Representation and Reasoning (KR'24)*, Hanoi, Vietnam, November 2, 2024. YouTube.
<https://youtu.be/DUDWp2YmhaY>
- Stefan Borgwardt, Vera Demberg, Mayank Jobanputra, Alisa Kovtunova, and Duy Nhu. Explaining critical situations over sensor data streams using proofs and natural language (Extended abstract). In Nico Potyka, editor, *Proceedings of the 5th Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'24)*, Hanoi, Vietnam, November 2, 2024.

<https://sites.google.com/view/xlokr2024>

Extended version: <https://ceur-ws.org/Vol-3739/paper-2.pdf>

- Stefan Borgwardt, Filippo De Bortoli, and Patrick Koopmann. The precise complexity of reasoning in \mathcal{ALC} with ω -admissible concrete domains. In Jean Christoph Jung, Laura Giordano, and Ana Ozaki, editors, *Proceedings of the 37th International Workshop on Description Logics (DL'24)*, volume 3739 of *CEUR Workshop Proceedings*, Bergen, Norway, June 18, 2024.
<https://ceur-ws.org/Vol-3739/paper-1.pdf>
- Stefan Borgwardt, Vera Demberg, Mayank Jobanputra, Alisa Kovtunova, and Duy Nhu. Explaining critical situations over sensor data streams using proofs and natural language. In Jean Christoph Jung, Laura Giordano, and Ana Ozaki, editors, *Proceedings of the 37th International Workshop on Description Logics (DL'24)*, volume 3739 of *CEUR Workshop Proceedings*, Bergen, Norway, June 18, 2024. **Best Student Contribution Award.**
<https://ceur-ws.org/Vol-3739/paper-2.pdf>

2023

- Christian Alrabbaa, Franz Baader, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Combining proofs for description logic and concrete domain reasoning (Extended abstract). In Nico Potyka, editor, *Proceedings of the 4th Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'23)*, Rhodes, Greece, September 2, 2023.
<https://sites.google.com/view/xlokr2023>
Extended version: doi:10.1007/978-3-031-45072-3_4
- Christian Alrabbaa, Stefan Borgwardt, Tom Friesse, Patrick Koopmann, and Mikhail Kotlov. Why not? Explaining missing entailments with Eevee. In Oliver Kutz, Carsten Lutz, and Ana Ozaki, editors, *Proceedings of the 36th International Workshop on Description Logics (DL'23)*, volume 3513 of *CEUR Workshop Proceedings*, Rhodes, Greece, September 2, 2023.
<https://ceur-ws.org/Vol-3515/paper-1.pdf>
Extended version: <https://arxiv.org/abs/2308.07294>
- Stefan Borgwardt, Steffen Breuer, and Alisa Kovtunova. Computing ABox justifications for query answers via Datalog rewriting. In Oliver Kutz, Carsten Lutz, and Ana Ozaki, editors, *Proceedings of the 36th International Workshop on Description Logics (DL'23)*, volume 3513 of *CEUR Workshop Proceedings*, Rhodes, Greece, September 2, 2023.
<https://ceur-ws.org/Vol-3515/paper-8.pdf>

2022

- Christian Alrabbaa, Stefan Borgwardt, Tom Friesse, Patrick Koopmann, Julián Méndez, and Alexej Popovič. On the eve of true explainability for OWL ontologies: Description logic proofs with Eevee and Evonne. In Ofer Arieli, Martin Homola, Jean Christoph Jung, and Marie-Laure Mugnier, editors, *Proceedings of the 35th International Workshop on Description Logics (DL'22)*, volume 3263 of *CEUR Workshop Proceedings*, Haifa, Israel, August 7, 2022.
<https://ceur-ws.org/Vol-3263/paper-2.pdf>
Extended version: <https://arxiv.org/abs/2206.07711>

- Christian Alrabbaa, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Finding good proofs for answers to conjunctive queries mediated by lightweight ontologies. In Ofer Arieli, Martin Homola, Jean Christoph Jung, and Marie-Laure Mugnier, editors, *Proceedings of the 35th International Workshop on Description Logics (DL'22)*, volume 3263 of *CEUR Workshop Proceedings*, Haifa, Israel, August 7, 2022.
<https://ceur-ws.org/Vol-3263/paper-3.pdf>
 Extended version: doi:10.1007/978-3-031-21541-4_11
- Stefan Borgwardt, Jörg Hoffmann, Alisa Kovtunova, Markus Krötzsch, Bernhard Nebel, and Marcel Steinmetz. Expressivity of planning with Horn description logic ontologies (extended abstract). In Ofer Arieli, Martin Homola, Jean Christoph Jung, and Marie-Laure Mugnier, editors, *Proceedings of the 35th International Workshop on Description Logics (DL'22)*, volume 3263 of *CEUR Workshop Proceedings*, Haifa, Israel, August 7, 2022.
<https://ceur-ws.org/Vol-3263/abstract-5.pdf>
 Extended version: doi:10.1609/aaai.v36i5.20489
- Christian Alrabbaa, Stefan Borgwardt, Tom Frieese, Patrick Koopmann, Julián Méndez, and Alexej Popovič. Explaining description logic entailments in practice with Eevee and Evonne. In Nico Potyka, editor, *3rd Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'22)*, Haifa, Israel, July 31, 2022.
<https://sites.google.com/view/xlokr2022>
 Extended version: <https://ceur-ws.org/Vol-3263/paper-2.pdf>
- Christian Alrabbaa, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Finding good proofs for answers to conjunctive queries mediated by lightweight ontologies (extended abstract). In Nico Potyka, editor, *3rd Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'22)*, Haifa, Israel, July 31, 2022.
<https://sites.google.com/view/xlokr2022>
 Extended version: doi:10.1007/978-3-031-21541-4_11

2021

- Christian Alrabbaa, Stefan Borgwardt, Nina Knieriemen, Alisa Kovtunova, Anna Milena Rothermel, and Frederik Wiehr. In the hand of the beholder: Comparing interactive proof visualizations (extended abstract). In Bart Bogaerts, editor, *2nd Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'21)*, Online [Hanoi, Vietnam], November 4, 2021.
<https://xlokr21.ai.vub.ac.be/papers/09/paper.pdf>
 Extended version: doi:10.1007/978-3-031-21541-4_14
- Stefan Borgwardt. Concise justifications versus detailed proofs for description logic entailments. In Bart Bogaerts, editor, *2nd Workshop on Explainable Logic-Based Knowledge Representation (XLoKR'21)*, Online [Hanoi, Vietnam], November 4, 2021.
<https://xlokr21.ai.vub.ac.be/papers/04/paper.pdf>
- Christian Alrabbaa, Franz Baader, Stefan Borgwardt, Patrick Koopmann, and Alisa Kovtunova. Finding good proofs for description logic entailments using recursive quality measures (extended abstract). In Martin Homola, Vladislav Ryzhikov, and Renate Schmidt, editors, *Proceedings of the 34th International Workshop on Description Logics (DL'21)*, volume 2954 of *CEUR Workshop Proceedings*, Bratislava, Slovakia, September 19, 2021.

<https://ceur-ws.org/Vol-2954/abstract-2.pdf>
Extended version: doi:10.1007/978-3-030-79876-5_17

- Christian Alrabbaa, Stefan Borgwardt, Nina Knieriemen, Alisa Kovtunova, Anna Milena Rothermel, and Frederik Wiehr. In the hand of the beholder: Comparing interactive proof visualizations. In Martin Homola, Vladislav Ryzhikov, and Renate Schmidt, editors, *Proceedings of the 34th International Workshop on Description Logics (DL'21)*, volume 2954 of *CEUR Workshop Proceedings*, Bratislava, Slovakia, September 19, 2021.
<https://ceur-ws.org/Vol-2954/paper-2.pdf>
Extended version: doi:10.1007/978-3-031-21541-4_14
- Stefan Borgwardt, Ernie Chang, Kathryn Chapman, Vera Demberg, Alisa Kovtunova, and Hui-Syuan Yeh. Logic-guided neural utterance generation from drone sensory data (extended abstract). In Martin Homola, Vladislav Ryzhikov, and Renate Schmidt, editors, *Proceedings of the 34th International Workshop on Description Logics (DL'21)*, volume 2954 of *CEUR Workshop Proceedings*, Bratislava, Slovakia, September 19, 2021.
<https://ceur-ws.org/Vol-2954/abstract-11.pdf>
Extended version: <http://www.lrec-conf.org/proceedings/lrec2022/pdf/2022.lrec-1.745.pdf>
- Stefan Borgwardt, Jörg Hoffmann, Alisa Kovtunova, and Marcel Steinmetz. Making DL-Lite planning practical (extended abstract). In Martin Homola, Vladislav Ryzhikov, and Renate Schmidt, editors, *Proceedings of the 34th International Workshop on Description Logics (DL'21)*, volume 2954 of *CEUR Workshop Proceedings*, Bratislava, Slovakia, September 19, 2021.
<https://ceur-ws.org/Vol-2954/abstract-7.pdf>
Extended version: doi:10.24963/kr.2021/61
- Stefan Borgwardt, Jörg Hoffmann, Alisa Kovtunova, and Marcel Steinmetz. Classical planning with avoid conditions. In *Proceedings of the 13th Workshop on Heuristics and Search for Domain-Independent Planning (HSDIP'21)*, Online [Guangzhou, China], August 2, 2021.
<https://openreview.net/forum?id=-I8lSfnXFPI>
Extended version: doi:10.1609/aaai.v36i9.21232

Theses

- Stefan Borgwardt. Fuzzy description logics with general concept inclusions. PhD thesis, Technische Universität Dresden, May 23, 2014. Evaluated **summa cum laude**.
<https://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa-145311>
- Stefan Borgwardt. The infimum problem as a generalization of the inclusion problem for automata. Diploma thesis, Technische Universität Dresden, October 13, 2010. Grade **1.1**.
<https://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa2-888026>
- Stefan Borgwardt. Bindungen. Diploma thesis, Technische Universität Dresden, July 15, 2010. In German. Grade **1.0**.
<https://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa2-892303>