

Anna Rapberger

Curriculum Vitae

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Research Interests

I study **logical foundations of AI**. My research explores ways to enhance statistical methods and refine our understanding of reasoning mechanisms, primarily through **logic-based approaches** and **knowledge representation formalisms**. My research interests span **non-monotonic reasoning**, **computational argumentation**, **logic programming**, **causality** and the discovery of causal mechanisms. I develop efficient **algorithmic solutions** for reasoning problems and investigate their **computational complexity**.

Education

- 2018–2023 **PhD in Computer Science *with distinction***, TU Wien, Vienna, Austria
 - Thesis: *Unpacking the Argument: A Claim-centric View on Abstract Argumentation*
 - Supervised by Stefan Woltran and Christian Fermüller
- 2015–2018 **MSc in Mathematics *with distinction***, University of Vienna, Vienna, Austria
 - Master's Thesis: *Connecting Formal Logics and Argumentation Systems*
 - Supervised by Christian Fermüller
- 2011–2015 **BSc in Mathematics**, University of Vienna, Vienna, Austria

Work Experience

- Since Aug 2023 **Research Associate in Argumentation-based Explainable AI**, Department of Computing, Imperial College London, London, United Kingdom
 - Member of the *Computational Logic and Argumentation group (CLArg)*
 - Funded by the ERC project *Argumentation-based Deep Interactive EXplanations (ADIX)*
- Apr-Jul 2023 **Post-doctoral researcher**, Institute of Logic and Computation, TU Wien, Vienna, Austria
 - Member of the research group *Databases and Artificial Intelligence (DBAI)*
 - Funded by the WWTF project *REVEAL-AI* and FWF project *HYPAR*
- 2018–2023 **Project Assistant**, Institute of Logic and Computation, TU Wien, Vienna, Austria
 - PhD Student in the research group *Databases and Artificial Intelligence (DBAI)*
 - Funded by FWF projects *LogiCS in Computer Science* and *HYPAR*, and WWTF project *REVEAL-AI*
- Sep-Nov 2021 **Visiting Researcher**, Centro Singular de Investigación en Tecnoloxías Intelixentes (CiTIUS), Universidade de Santiago de Compostela, Santiago de Compostela, Spain
 - Hosted by José Maria Alonso
- Nov-Dec 2020 **Visiting Researcher**, Department of Computer Science, Leipzig University, Leipzig, Germany
 - Hosted by Gerhard Brewka and Ringo Baumann
- Spring 2019 **Lecturer**, University of Vienna, Vienna, Austria
 - Course title: *Programmierpraktikum (Programming in Python)*
- 2014–2018 **Teaching Assistant**, University of Vienna, Vienna

Awards

- Nov 2024 **KR Early Career Award 2024** ([link](#)) for outstanding contributions to theoretical and practical aspects of computational argumentation at the *21st International Conference on Principles of Knowledge Representation and Reasoning (KR 2024)*

- Jun 2024 Among the Runner-Up candidates for the **Heinz Zemanek Award 2024**, which is a biannual dissertation prize awarded by the [Austrian Computer Society \(OCG\)](#)
- Jun 2021 **Best Student Poster Runner-Up Award** at the *8th International Workshop on Computational Social Choice (COMSOC 2021)*
- Aug 2020 **Best STAIRS@ECAI 2020 Paper Award** at the *9th European Starting AI Researchers' Symposium (STAIRS 2020)*
 ▶ including a grant for a 3-month internship at CiTIUS, University of Santiago de Compostela

Academic Service

- Event Organization Workshop and Tutorial Co-Chair of the *22nd International Conference on Principles of Knowledge Representation and Reasoning (KR 2025)*
 ▶ joint organization with Matthias Knorr
- Co-Chair of the *23rd International Workshop on Nonmonotonic Reasoning (NMR 2025)*
 ▶ joint organization with Sebastian Rudolph
- Co-organizer of the *Austrian Society for Artificial Intelligence (ASAI) Networking Event 2023*
 ▶ joint organization with Amin Anjomshoaa
- Co-organizer of the *2nd Workshop on New Trends in Formal Argumentation (NTFA 2019)*
 ▶ joint organization with Martin Diller and Stefan Woltran
- Award Committee Award Committee Member for the [Vienna Center for Logic and Algorithms \(VCLA\)](#) International Student Award 2024
- PC member at AAAI (2025, 2024, 2023), ECAI (2025), KR (2024, 2023, 2022), NMR (2024), ArgXAI (2024), JELIA (2023), KRR@SAC (2023)
- Conference reviews AAAI (2025, 2024, 2023), ECAI (2025, 2023), KR (2024, 2023, 2022, 2021), NMR (2024, 2022), ArgXAI (2024), JELIA (2023, 2021), KRR@SAC (2023), FoIKS (2022), CLAR (2021), ECSQARU (2021), EUMAS (2021), COMMA (2020)
- Journal reviews Artificial Intelligence (AIJ) (2024, 2023)
 Journal of Artificial Intelligence Research (JAIR) (2025, 2023 (2×))
 Theory and Practice of Logic Programming (TPLP) (2024 (2×))
 Argument & Computation (A&C) (2024, 2023)
 International Journal of Approximate Reasoning (JAR) (2023 (2×), 2021, 2020)

Scientific Talks (Selection)

- Unpacking the Argument.* 21st International Conference on Principles of Knowledge Representation and Reasoning. KR Early Career Award talk. Hanoi, Vietnam, November 2024.
- On the Robustness of Argumentative Explanations.* 10th International Conference on Computational Models of Argument. Hagen, Germany, September 2024.
- Redefining ABA+ Semantics via Abstract Set-to-Set Attacks.* 38th AAAI Conference on Artificial Intelligence. Vancouver, Canada, February 2024.
- Sets Attacking Sets in Abstract Argumentation.* 21th International Workshop on Non-Monotonic Reasoning. Rhodes, Greece, September 2023.
- On Dynamics in Structured Argumentation Formalisms: Enforcement and deciding strong equivalence made tractable.* Individual and Collective Reasoning Group, University of Luxembourg. Guest talk. Campus Belval, Luxembourg, April 2023.

On Dynamics in Structured Argumentation Formalisms. 19th International Conference on Principles of Knowledge Representation and Reasoning. Haifa, Israel, August 2022.

Equivalence in Argumentation Frameworks with a Claim-Centric View - Classical Results with Novel Ingredients. 36th AAAI Conference on Artificial Intelligence. Virtual Event, February 2022.

A Coherently Embedded Kemeny Winner: Computing Kemeny Rankings from d-Euclidean Preferences. Algorithmic Decision Theory - 7th International Conference. Toulouse, France, November 2021.

The Complexity Landscape of Claim-Augmented Argumentation Frameworks. 35th AAAI Conference on Artificial Intelligence. Virtual event, February 2021.

Defining argumentation semantics under a claim-centric view. 9th European Starting AI Researchers' Symposium. Best paper award talk. Virtual event, August 2020.

Teaching and Mentoring

Lecturer/Instructor **Abstract Argumentation**, TU Wien, 4.5 ECTS

Introduces core concepts and recent developments of formal argumentation in theory and practice.

- Master's and PhD level course (lecture part and practical part); evaluation: individual projects
- Taught in Winter 2023, Winter 2022, Spring 2022; team of 4 lecturers, 6-10 students
- Responsibilities: lecturing, preparing lectures, proposing and supervising student projects

Research Seminar LogiCS, TU Wien, 3 ECTS

Research seminar of the doctoral college *DK Logical Methods in Computer Science (LogiCS)*.

- Coordination and organisation of in person, hybrid, and online formats (2019 - 2021)

Programmierpraktikum (Programming in Python), University of Vienna, 5 ECTS

Part of *BSc Mathematics*. Introduces Python: basic concepts and paradigms, project design.

- Bachelor's level course (lecture part and practical part); evaluation: group projects and exams
- Taught in Spring 2029; team of 3 lecturers, 6 teaching assistants, 150-200 students, 6 groups
- Responsibilities: coordinating two parallel groups, instructing teaching assistants, providing lecture material, designing exams, supervising student projects

Teaching Assistant **Formal Methods in Computer Science**, TU Wien, 6 ECTS

Part of *MSc Logic and Computation*. Introduces complexity and computability theory, semantics of programming languages, formal verification and model checking.

- Master's level course (lecture part and practical part); evaluation: exercises and exams
- Teaching assistant in Winter 2019, Winter 2020, Spring 2021; approx. 100-200 students
- Responsibilities: teaching exercise classes, correcting exercises, supervising exams

Programmierpraktikum (Programming in Python), University of Vienna, 5 ECTS

- Teaching assistant in Spring 2018; evaluation: exercises (instead of group projects) and exams
- Responsibilities: supervising and lecturing (short presentations) in one of six parallel groups

Hilfsmittel aus der EDV, University of Vienna, 4 ECTS

Part of *BSc Mathematics*. The course provides an introduction to Wolfram Mathematica and L^AT_EX.

- Bachelor's level course (lecture part and practical part); evaluation: weekly exercises
- Teaching assistant between 2014 - 2018; approx. 150 students, between 3-6 groups
- Responsibilities: short presentations, correcting and grading exercises in one of the groups

Supervising *Yeva Hunanyan*, Master student at Imperial College London (ongoing)

- Joint supervision of final year project (Master's thesis) with Antonio Rago and Fabrizio Russo
- Topic: *From Arguments to Insights: Advancing Causal Discovery with ABA Semantics*

Preesha Gehlot, Master student at Imperial College London (ongoing)

- Joint supervision of final year project (Master's thesis) with Fabrizio Russo
- Topic: *GNNs for Assumption-based Argumentation and Causal Discovery*

Fabrizio Russo, PhD student at Imperial College London (completed in February 2025)

- Assistant supervisor in 2023 - 2025; main supervisor: Francesca Toni
- Thesis title: *Causal Discovery for Trustworthy Artificial Intelligence*

Purin Sukpanichnant, Master student at Imperial College London (completed in June 2024)

- Joint supervision of final year project (Master's thesis) with Francesca Toni
- Thesis title: *PeerArg: Argumentative Peer Review* (presented at *NeLaMKRR@KR, 2024*)

Mentoring *Hannah Wilk*, Master student at the University of Amsterdam

- Mentoring in the scope of the [RWTH Aachen TANDEM Mentoring Program](#), a one-year program dedicated to the academic development of female students

Publications

A list of my publications can be also found under [DBLP](#) and [Google Scholar](#).

Journal articles

- [1] Michael Bernreiter, Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. The effect of preferences in abstract argumentation under a claim-centric view. *Journal of Artificial Intelligence Research*, 81:203–262, 2024.
- [2] Ringo Baumann, Anna Rapberger, and Markus Ulbricht. Equivalence in argumentation frameworks with a claim-centric view: Classical results with novel ingredients. *Journal of Artificial Intelligence Research*, 77:891–948, 2023.
- [3] Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. A claim-centric perspective on abstract argumentation semantics: Claim-defeat, principles, and expressiveness. *Artificial Intelligence*, 324:104011, 2023.
- [4] Wolfgang Dvořák, Alexander Greßler, Anna Rapberger, and Stefan Woltran. The complexity landscape of claim-augmented argumentation frameworks. *Artificial Intelligence*, 317:103873, 2023.
- [5] Anna Rapberger and Markus Ulbricht. On dynamics in structured argumentation formalisms. *Journal of Artificial Intelligence Research*, 77:563–643, 2023.
- [6] Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. On the different types of collective attacks in abstract argumentation: equivalence results for SETAFs. *Journal of Logic and Computation*, 30(5):1063–1107, 06 2020.

Conference proceedings

- [7] Matti Berthold, Anna Rapberger, and Markus Ulbricht. Capturing non-flat assumption-based argumentation with bipolar SETAFs. In *21th International Conference on Principles of Knowledge Representation and Reasoning (KR'24), Proceedings*, pages 128–133, 8 2024.
- [8] Giovanni Buraglio, Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. Constrained derivation in assumption-based argumentation. In *Foundations of Information and Knowledge Systems - 13th International Symposium (FoIKS'24), Proceedings*, volume 14589 of *Lecture Notes in Computer Science*, pages 340–359. Springer, 2024.
- [9] Yannis Dimopoulos, Wolfgang Dvořák, Matthias König, Anna Rapberger, Markus Ulbricht, and Stefan Woltran. Redefining ABA+ semantics via abstract set-to-set attacks. In *38th AAAI Conference on Artificial Intelligence (AAAI'24), Proceedings*, pages 10493–10500. AAAI Press, 2024.

- [10] Tuomo Lehtonen, Anna Rapberger, Francesca Toni, Markus Ulbricht, and Johannes P. Wallner. Instantiations and computational aspects of non-flat assumption-based argumentation. In *33rd International Joint Conference on Artificial Intelligence (IJCAI'24)*, *Proceedings*, pages 3457–3465. ijcai.org, 2024.
- [11] Tuomo Lehtonen, Anna Rapberger, Francesca Toni, Markus Ulbricht, and Johannes P. Wallner. On computing admissibility in aba. In *Computational Models of Argument (COMMA'24)*, *Proceedings*, pages 121–132. IOS Press, 2024.
- [12] Francesco Leofante, Hamed Ayoobi, Adam Dejl, Gabriel Freedman, Deniz Gorur, Junqi Jiang, Guilherme Paulino-Passos, Antonio Rago, Anna Rapberger, Fabrizio Russo, Xiang Yin, Dekai Zhang, and Francesca Toni. Contestable ai needs computational argumentation. In *21th International Conference on Principles of Knowledge Representation and Reasoning (KR'24)*, *Proceedings*, pages 888–896, 8 2024.
- [13] Anna Rapberger and Francesca Toni. On the robustness of argumentative explanations. In *Computational Models of Argument (COMMA'24)*, *Proceedings*, pages 217–228. IOS Press, 2024.
- [14] Anna Rapberger and Markus Ulbricht. Repairing assumption-based argumentation frameworks. In *21th International Conference on Principles of Knowledge Representation and Reasoning (KR'24)*, *Proceedings*, pages 608–619, 8 2024.
- [15] Fabrizio Russo, Anna Rapberger, and Francesca Toni. Argumentative causal discovery. In *21th International Conference on Principles of Knowledge Representation and Reasoning (KR'24)*, *Proceedings*, pages 938–949, 8 2024.
- [16] Markus Ulbricht, Nico Potyka, Anna Rapberger, and Francesca Toni. Non-flat ABA is an instance of bipolar argumentation. In *38th AAAI Conference on Artificial Intelligence (AAAI'24)*, *Proceedings*, pages 10723–10731. AAAI Press, 2024.
- [17] Michael Bernreiter, Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. The effect of preferences in abstract argumentation under a claim-centric view. In *37th AAAI Conference on Artificial Intelligence (AAAI'23)*, *Proceedings*, pages 6253–6261. AAAI Press, 2023.
- [18] Matti Berthold, Anna Rapberger, and Markus Ulbricht. Forgetting Aspects in Assumption-Based Argumentation. In *20th International Conference on Principles of Knowledge Representation and Reasoning (KR'23)*, *Proceedings*, pages 86–96, 8 2023.
- [19] Matti Berthold, Anna Rapberger, and Markus Ulbricht. On the expressive power of assumption-based argumentation. In *18th European Conference on Logics in Artificial Intelligence (JELIA'23)*, *Proceedings*, volume 14281 of *Lecture Notes in Computer Science*, pages 145–160. Springer, 2023.
- [20] Tuomo Lehtonen, Anna Rapberger, Markus Ulbricht, and Johannes P. Wallner. Argumentation Frameworks Induced by Assumption-based Argumentation: Relating Size and Complexity. In *20th International Conference on Principles of Knowledge Representation and Reasoning (KR'23)*, *Proceedings*, pages 440–450, 8 2023.
- [21] Ringo Baumann, Anna Rapberger, and Markus Ulbricht. Equivalence in argumentation frameworks with a claim-centric view - classical results with novel ingredients. In *36th AAAI Conference on Artificial Intelligence (AAAI'22)*, *Proceedings*, pages 5479–5486. AAAI Press, 2022.
- [22] Matthias König, Anna Rapberger, and Markus Ulbricht. Just a matter of perspective: Intertranslating expressive argumentation formalisms. In *9th International Conference on Computational Models of Argument (COMMA'22)*, *Proceedings*, pages 212–223. IOS Press, 2022.
- [23] Anna Rapberger and Markus Ulbricht. On dynamics in structured argumentation formalisms. In *19th International Conference on Principles of Knowledge Representation and Reasoning (KR'22)*, *Proceedings*, 2022.

- [24] Wolfgang Dvořák, Alexander Greßler, Anna Rapberger, and Stefan Woltran. The complexity landscape of claim-augmented argumentation frameworks. In *35th AAAI Conference on Artificial Intelligence (AAAI'21), Proceedings*, pages 6296–6303. AAAI Press, 2021.
- [25] Thekla Hamm, Martin Lackner, and Anna Rapberger. Computing kemeny rankings from d-euclidean preferences. In *7th International Conference on Algorithmic Decision Theory (ADT'21), Proceedings*, volume 13023, pages 147–161. LNCS, 2021.
- [26] Wolfgang Dvořák, Sarah Alice Gaggl, Anna Rapberger, Johannes Peter Wallner, and Stefan Woltran. The ASPARTIX system suite. In *Computational Models of Argument (COMMA'20), Proceedings*, volume 326 of *Frontiers in Artificial Intelligence and Applications*, pages 461–462. IOS Press, 2020.
- [27] Wolfgang Dvořák, Anna Rapberger, Johannes Peter Wallner, and Stefan Woltran. ASPARTIX-V19 - an answer-set programming based system for abstract argumentation. In *Foundations of Information and Knowledge Systems - 11th International Symposium (FoIKS'20), Proceedings*, volume 12012 of *LNCS*, pages 79–89. Springer, 2020.
- [28] Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. Argumentation semantics under a claim-centric view: Properties, expressiveness and relation to setafs. In *17th International Conference on Principles of Knowledge Representation and Reasoning (KR'20), Proceedings*, pages 341–350, 2020.
- [29] Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. On the relation between claim-augmented argumentation frameworks and collective attacks. In *24th European Conference on Artificial Intelligence (ECAI'20), Proceedings*, volume 325 of *FAIA*, pages 721–728. IOS Press, 2020.
- [30] Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. Strong equivalence for argumentation frameworks with collective attacks. In *42nd German Conference on AI (KI'19), Proceedings*, volume 11793 of *LNCS*, pages 131–145. Springer, 2019.

Workshop proceedings and Poster presentations

- [31] Francesca Toni Anna Rapberger, Markus Ulbricht. On the correspondence of non-flat assumption-based argumentation and logic programming with negation as failure in the head. In *22th International Workshop on Non-Monotonic Reasoning (NMR'24)*, CEUR Workshop Proceedings. CEUR-WS.org, 2024.
- [32] Giovanni Buraglio, Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. Constrained derivation in assumption-based argumentation. In *7th Workshop on Advances in Argumentation in Artificial Intelligence (AI³ 2023)*, CEUR Workshop Proceedings. CEUR-WS.org, 2023.
- [33] Yannis Dimopoulos, Wolfgang Dvořák, Matthias König, Anna Rapberger, Markus Ulbricht, and Stefan Woltran. Sets attacking sets in abstract argumentation. In *21st International Workshop on Non-Monotonic Reasoning (NMR'23)*, volume 3464 of *CEUR Workshop Proceedings*, pages 22–31. CEUR-WS.org, 2023.
- [34] Michael Bernreiter, Wolfgang Dvořák, Anna Rapberger, and Stefan Woltran. The effect of preferences in abstract argumentation under a claim-centric view. In *20th International Workshop on Non-Monotonic Reasoning (NMR'22)*, volume 3197 of *CEUR Workshop Proceedings*, pages 27–38. CEUR-WS.org, 2022.
- [35] Anna Rapberger, Markus Ulbricht, and Johannes Peter Wallner. Argumentation frameworks induced by assumption-based argumentation: Relating size and complexity. In Ofer Arieli, Giovanni Casini, and Laura Giordano, editors, *20th International Workshop on Non-Monotonic Reasoning (NMR'22)*, volume 3197 of *CEUR Workshop Proceedings*, pages 92–103. CEUR-WS.org, 2022.
- [36] Ringo Baumann, Anna Rapberger, and Markus Ulbricht. Equivalence in argumentation frameworks with a claim-centric view – classical results with novel ingredients. In *19th International Workshop on Non-Monotonic Reasoning (NMR'21)*. CoRR, 2021.

- [37] Wolfgang Dvořák, Matthias König, Anna Rapberger, Johannes Peter Wallner, and Stefan Woltran. ASPARTIX-V - a solver for argumentation tasks using ASP. In *Workshop on Answer Set Programming and Other Computing Paradigms (ASPOCP'21)*, 2021.
- [38] Thekla Hamm, Martin Lackner, and Anna Rapberger. Computing kemeny rankings from d-euclidean preferences (poster). In *8th international Workshop on Computational Social Choice (COMSOC '21), Poster session*, 2021.
- [39] Wolfgang Dvořák, Anna Rapberger, and Johannes Peter Wallner. Labelling-based algorithms for SETAFs. In *3rd International Workshop on Systems and Algorithms for Formal Argumentation (SAFA'20)*, volume 2672 of *CEUR Workshop Proceedings*, pages 34–46. CEUR-WS.org, 2020.
- [40] Anna Rapberger. Defining argumentation semantics under a claim-centric view. In *9th European Starting AI Researchers' Symposium (STAIRS'20)*, volume 2655 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2020.