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Fryderyka Joliot-Curie 15, Room 324

50-383 Wrocław, Poland

Knowledge-Based Systems, TU Wien Informatics

Favoritenstrasse 9, 1040 Wien, Austria

Education

- 25.06.2024

PhD in Computer Science (with distinction), Technische Universität Dresden, Germany.
Thesis: *Database-Inspired Reasoning Problems in Description Logics With Path Expressions*
Supervisors: Sebastian Rudolph (TU Dresden) and Emanuel Kieroński (University of Wrocław)
Reviewers: Sebastian Rudolph (TU Dresden) and Magdalena Ortiz (TU Wien)
- 01.10.2018

M1 Master Parisien de Recherche en Informatique, École Normale Supérieure Paris-Saclay, France
Thesis: *Assertion Languages with Modalities and Separating Connectives*
Supervisor: Stéphane Demri (LMF, CNRS & ENS Paris-Saclay)
Grade: Magna cum laude
- 15.02.2017

BSc in Computer Science, University of Wrocław, Poland
Thesis: *Satisfiability of the Two-Variable Fragment of FO with Counting Quantifiers over Finite Trees*
Supervisor: Witold Charatonik (University of Wrocław)

Positions

- 03.2025-???

Project Assistant, Tu Wien, Austria
- 10.2024-∞

Assistant Professor, University of Wrocław, Poland
- 04.'19-09.'24

Research Associate, Technische Universität Dresden, Germany

Participation in Research Grants

- 04.'19-09.'24

Research Associate: ERC Consolidator Grant DeciGUT (PI: Sebastian Rudolph)
Hosting institution: TU Dresden, Germany
- 03.'17-06.'18

Student Assistant: Polish National Science Centre Grant 2016/21/B/ST6/01444 (PI: E. Kieroński)
Hosting institution: University of Wrocław, Poland

Longer Research Stays

- 2021
(2mth)

Research visit (Topic: Model Theory of Ordered Logics)
Hosted by: Tampere University (Antti Kuusisto)
- 2018
(3mth)

Research visits (Topic: Query Entailment in Description Logics)
Hosted by: TU Dresden (Sebastian Rudolph)
- 2018
(3mth)

Research Internship (Topic: Algebraic Characterisations of Tree Languages)
Hosted by: University of Oxford (James Worrell & Michaël Cadilhac)
- 2017
(3mth)

Research Internship (Topic: Temporal Logics and Weighted Automata)
Hosted by: IST Austria (Krishnendu Chatterjee)

Teaching

- '18–∞ University of Wrocław
 Logic in Computer Science: (TA) 2018–2024, (Supplementary Lecture/Repetytorium): 2020, 2021, 2024
 Research Seminar in Logic and Databases: summer 2018/19, winter 2019/20
 Finite and Algorithmic Model Theory: (Lecturer + TA) 2020, 2022, 2025, (Seminar) 2020
 Databases: (TA) 2019, 2025
 Discrete Mathematics: (TA) 2024
 Python: (TA) 2024
- '21–'22 TU Dresden
 Finite and Algorithmic Model Theory: (Lecturer + TA) 2021, 2022
- '21–'24 XIV Highschool of Wrocław
 Computer Science Teacher. Classes related to the Matura Exam in Computer Science.

Awards

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| 2023 | Best student paper at JELIA 2023 |
| 2021 | Award for Outstanding Young Scientists
Given by the Polish Ministry of Science and Higher Education (194 040 PLN) |
| 2021 | Best student paper at JELIA 2021 |
| 2019 | Hugo Steinhaus Scholarship for Mathematical Sciences
Award for outstanding PhD students from Wrocław (18.000 PLN) |

Professional service

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| 2025 | (co)Organizer of : Description Logic Workshop 2025, VLDB Summer School 2025
PC: AAAI 2025, IJCAI 2025, DL 2025, ...
Reviewer (Conferences): CSL 2025, LICS 2025, ICALP 2025, ...
Reviewer (Journals): Annals of Pure and Applied Logic, LMCS |
| 2024 | Reviewer (Conferences): AIML 2024, PODS 2024
Reviewer (Journals): Logic Journal of the IGPL, LMCS, SN Computer Science, Artificial Intelligence
PC: AAAI 2024, DL 2024, IJCAI 2024, KR 2024 |
| 2023 | Reviewer: EUMAS 2023
PC: AAAI 2023, KR 2023, JELIA 2023, IJCAI 2023, DL 2023, DPFO Workshop 2023, TIME 2023 |
| 2022 | Reviewer: CSL 2022, LMCS, IPL, JAIR, ToCL
PC: IJCAI 2022, KR 2022, DL 2022 |
| 2021 | Reviewer: DL 2021, Elsevier Artificial Intelligence, Fundamenta Informaticae
Senior PC: IJCAI 2021 |
| 2020 | Reviewer: KR 2020, CONCUR 2020, DL 2020 |

Student Supervision (Contact me if you are interested!)

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| 2024 | Sebastian Zięciak (MSc, Ongoing)
Finite Controllability for Forward Existential Rules |
| 2024 | Mikołaj Swoboda (BSc, Ongoing)
Finite Model Property for Hybrid Graded Mu-Calculus |
| 2024 | Benno Fünfstück (MSc)
A Constructive Proof of a Van Benthem Theorem for the Forward Guarded Fragment of First Order Logic |
| 2023 | Karol Ochman-Milarski (BSc)
Resolution for Forward Guarded Fragment |

2023	Julita Osman, Aleksandra Stępniewska, Nikola Wrona (BEng) E-learning platform supporting studying for the Matura exam in Computer Science
2022	Mateusz Urbańczyk (MSc) Categorical semantics for model comparison games for description logics
2022	Johannes Tantow (Großer Beleg) Interpolation for the Two-Variable Guarded Fragment with Counting
2021	Oskar Fiuk (BSc) Presburger Tree Automata With Applications to Logics With Expressive Counting
2021	Sebastian Zięciak (BSc) On Several Equivalent Characterisations of the Variety R
2021	Maja Orłowska and Anna Pacanowska (BSc) Statistical constructions in decidable fragments of First-Order Logic
2021	Martyna Siejba (MSc) The complexity of the satisfiability problem for Modal Logics with Data over Heaps

Peer-Reviewed Conference Papers

2024	Data Complexity in Expressive Description Logics With Path Expressions. IJCAI 2024 Bartosz Bednarczyk
2023	Beyond ALCreg: Exploring Non-Regular Extensions of PDL with Description Logics Features. JELIA 2023 (Best Student Paper Award) Bartosz Bednarczyk
2023	On the Limits of Decision: the Adjacent Fragment of First-Order Logic. ICALP 2023 Bartosz Bednarczyk, Daumantas Kojelis, Ian Pratt-Hartmann
2022	Finite Entailment of Local Queries in the Z Family of Description Logics. AAAI 2022 Bartosz Bednarczyk, Emanuel Kieroński
2022	The Price of Selfishness: Conjunctive Query Entailment for ALCSelf Is 2EXPTIME-Hard. AAAI 2022 Bartosz Bednarczyk, Sebastian Rudolph
2022	Towards a Model Theory of Ordered Logics: Expressivity and Interpolation. MFCS 2022 Bartosz Bednarczyk, Reijo Jaakkola
2022	Presburger Büchi Tree Automata with Applications to Logics with Expressive Counting. WOLLIC 2022 Bartosz Bednarczyk, Oskar Fiuk
2021	"Most of" leads to undecidability: Failure of adding frequencies to LTL. FOSSACS 2021 Bartosz Bednarczyk, Jakub Michaliszyn
2021	On Classical Decidable Logics Extended with Percentage Quantifiers and Arithmetics. FSTTCS 2021 Bartosz Bednarczyk, Maja Orłowska, Anna Pacanowska, Tony Tan
2021	Exploiting Forwardness: Satisfiability and Query-Entailment in Forward Guarded Fragment. JELIA 2021 (Best Student Paper Award) Bartosz Bednarczyk
2020	Satisfiability and Query Answering in Description Logics with Global and Local Cardinality Constraints. ECAI 2020 Franz Baader, Bartosz Bednarczyk, Sebastian Rudolph
2020	A Framework for Reasoning about Dynamic Axioms in Description Logics. IJCAI 2020 Bartosz Bednarczyk, Stéphane Demri, Alessio Mansutti

- 2020 **All-Instances Oblivious Chase Termination is Undecidable for Single-Head Binary TGDs.**
IJCAI 2020
Bartosz Bednarczyk, Robert Ferens, Piotr Ostropolski-Nalewaja
- 2020 **Modal Logics with Composition on Finite Forests: Expressivity and Complexity.**
LICS 2020
Bartosz Bednarczyk, Stéphane Demri, Raul Fervari, Alessio Mansutti
- 2020 **A Note on C2 Interpreted over Finite Data-Words.**
TIME 2020
Bartosz Bednarczyk, Piotr Witkowski
- 2019 **Worst-Case Optimal Querying of Very Expressive Description Logics with Path Expressions and Succinct Counting.**
IJCAI 2019
Bartosz Bednarczyk, Sebastian Rudolph
- 2019 **On the Complexity of Graded Modal Logics with Converse.**
JELIA 2019
Bartosz Bednarczyk, Emanuel Kieroński, Piotr Witkowski
- 2019 **Why Propositional Quantification Makes Modal Logics on Trees Robustly Hard?**
LICS 2019
Bartosz Bednarczyk, Stéphane Demri
- 2017 **Extending Two-Variable Logic on Trees.**
CSL 2017
Bartosz Bednarczyk, Witold Charatonik, Emanuel Kieroński
- 2017 **Modulo Counting on Words and Trees.**
FSTTCS 2017
Bartosz Bednarczyk, Witold Charatonik

Journal Papers

- 2025 **About the Expressive Power and Complexity of Order-Invariance with Two Variables.**
Logical Methods in Computer Science
Bartosz Bednarczyk, Julien Grange
- 2024 **Exploring Non-Regular Extensions of Propositional Dynamic Logic with Description-Logics Features. .**
Logical Methods in Computer Science
Bartosz Bednarczyk
- 2023 **How to Tell Easy from Hard: Complexity of Conjunctive Query Entailment in Extensions of ALC.**
Journal of Artificial Intelligence Research
Bartosz Bednarczyk, Sebastian Rudolph
- 2023 **On Composing Finite Forests with Modal Logics.**
ACM Transactions on Computational Logic
Bartosz Bednarczyk, Stéphane Demri, Raul Fervari, Alessio Mansutti
- 2022 **Why Does Propositional Quantification Make Modal and Temporal Logics on Trees Robustly Hard?**
Logical Methods in Computer Science
Bartosz Bednarczyk, Stéphane Demri
- 2021 **Completing the Picture: Complexity of Graded Modal Logics with Converse.**
Theory and Practice of Logic Programming (invited paper)
Bartosz Bednarczyk, Emanuel Kieroński, Piotr Witkowski

- 2021 **Statistical EL is ExpTime-complete.**
Information Processing Letters
Bartosz Bednarczyk
- 2020 **One-variable logic meets Presburger arithmetic.**
Theoretical Computer Science
Bartosz Bednarczyk

Informal Workshop Papers

- 2024 **On the Limits of Decision: the Adjacent Fragment of First-Order Logic (Extended Abstract)**
Description Logics 2024
Bartosz Bednarczyk, Daumantas Kojelis and Ian Pratt-Hartmann
- 2024 **Data Complexity in Expressive Description Logics With Path Expressions And Its Applications in Rooted Conjunctive Query Entailment (Extended Abstract)**
Description Logics 2024
Bartosz Bednarczyk
- 2022 **Comonadic Semantics for Description Logics Games**
Description Logics 2022
Bartosz Bednarczyk, Mateusz Urbanczyk
- 2021 **The Price of Selfishness: Conjunctive Query Entailment for ALCSelf is 2ExpTime-hard (Extended Abstract)**
Description Logics 2021
Bartosz Bednarczyk, Sebastian Rudolph
- 2021 **Finite-Controllability of Conjunctive Queries in the Z family of Description Logics (Extended Abstract)**
Description Logics 2021
Bartosz Bednarczyk, Emanuel Kieroński
- 2019 **Worst-Case Optimal Querying of Very Expressive Description Logics with Path Expressions and Succinct Counting**
Description Logics 2019
Bartosz Bednarczyk, Sebastian Rudolph
- 2019 **Satisfiability Checking and Conjunctive Query Answering in Description Logics with Global and Local Cardinality Constraint.**
Description Logics 2019
Franz Baader, Bartosz Bednarczyk, Sebastian Rudolph