Bartosz Bednarczyk

ORCID: 0000-0002-8267-7554
Website: bartoszjanbednarczyk.github.io
Email: bartosz.bednarczyk@cs.uni.wroc.pl

Institute of Computer Science, University of Wrocław
Fryderyka Joliot-Curie 15,
Room 324
50-383 Wrocław, Poland

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

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

10.'18–09.'22 **Principal Investigator**: Polish Min. of Science and H. Education "Diamond Grant" DI2017006447.
Hosting institution: University of Wrocław, Poland
Realised *with distinction*.

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

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)
2018	Diamond Grant by the Polish Ministry of Science and Higher Education Prestigious funding for own four-year research project

Professional service

2025	(co)Organizer of : Description Logic Workshop 2025, VLDB Summer School 2025 PC: AAAI 2025, . . . Reviewer (Conferences): CSL 2025, . . .
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!)

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 Orlowska, 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**.

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

2024   **About the Expressive Power and Complexity of Order-Invariance with Two Variables**.
Logical Methods in Computer Science (accepted with major revisions)
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