

ORCID: 0000-0002-8267-7554

Website: bartoszjanbednarczyk.github.ioEmail: bartosz.bednarczyk@cs.uni.wroc.pl

Institute of Computer Science, University of Wrocław
Fryderyka Joliot-Curie 15, 50-383 Wrocław, Poland
Computational Logic Group, ICCL@TU Dresden,
Nöthnitzer Str. 46, 01187 Dresden, Germany

Education

- 23.06.2024 **PhD in Computer Science**, 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

- 04.2019–Now **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–... Logic in Computer Science @ University of Wrocław (TA)
- '21–... Computer Science Teacher @ XIV Highschool of Wrocław
- '19–'20 Research Seminar in Logic and Databases (TA) @ University of Wrocław
- '19–'22 Finite and Algorithmic Model Theory (Lecturer + TA)
@ University of Wrocław '19 '22, @ TU Dresden '21 '22.
- '19–'19 Databases @ University of Wrocław (TA)

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

- 2024 Reviewer: PODS 2024, Logic Journal of the IGPL, AIML 2024, LMCS, SN Computer Science
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

- 2024 Sebastian Zięciak (MSc, Ongoing)
Title: Finite Controllability for Forward Existential Rules
- 2024 Mikołaj Swoboda (BSc, Ongoing)
Title: Finite Model Property for Hybrid Graded Mu-Calculus
- 2024 Benno Fünfstück (MSc)
Title: A Constructive Proof of a Van Benthem Theorem for the Forward Guarded Fragment of First Order Logic
- 2023 Karol Ochman-Milarski (BSc)
Title: Resolution for Forward Guarded Fragment
- 2023 Julita Osman, Aleksandra Stępniewska, Nikola Wrona (BEng)
Title: E-learning platform supporting studying for the Matura exam in Computer Science
- 2022 Mateusz Urbańczyk (MSc)
Title: Categorical semantics for model comparison games for description logics
- 2022 Johannes Tantow (Großer Beleg)
Title: Interpolation for the Two-Variable Guarded Fragment with Counting

- 2021 Oskar Fiuk (BSc)
Title: Presburger Tree Automata With Applications to Logics With Expressive Counting
- 2021 Sebastian Zięciak (BSc)
Title: On Several Equivalent Characterisations of the Variety R
- 2021 Maja Orłowska and Anna Pacanowska (BSc)
Title: Statistical constructions in decidable fragments of First-Order Logic
- 2021 Martyna Siejba (MSc)
Title: 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 (to appear)
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

- 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 (in printing)
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

- 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 ALC_{Self} is 2ExpTime -hard (Extended Abstract)**
Description Logics 2021
Bartosz Bednarczyk, Sebastian Rudolph
- 2021 **Finite-Controllability of Conjunctive Queries in the \mathcal{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