Đorđe Marković (Djordje Markovic)

PhD student / Knowledge Representation and Reasoning / KU Leuven

Leuven, Belgium

dorde.markovic@kuleuven.be | +32 496 06 24 12 | djordje.rs

Professional Summary

I am a PhD student at KULeuven University in the Knowledge Representation and Reasoning group, under the supervision of Professor Marc Denecker. The main topic of my research is the proper treatment of partial functions in Knowledge Representation. Building on this, I worked on the relations of partial functions and types (sorts) in logic and applied these techniques to the decision modeling languages. On this journey, I also get to work on epistemic logic.

Education

2021 - Present | **KU Leuven**, Leuven, Belgium
PhD in Computer Science, Knowledge Representation

2020 - 2021 | **KU Leuven**, Leuven, Belgium
Predoctoral training in Computer Science, Knowledge Representation

2018 - 2019 | **Faculty of Science**, University of Kragujevac, Serbia
M.S. in Computer Science

2013 - 2018 | **Faculty of Science**, University of Kragujevac, Serbia
B.S. in Computer Science

2009 - 2013 | **Prva Kragujevačka Gimnazija**, Kragujevac, Serbia
High School Diploma in Natural Sciences

Summer schools

2024 | **ESSLLI**, Leuven, Belgium
35th European Summer School in Logic, Language and Information

2022 | **ESSLLI**, Galway, Ireland
33th European Summer School in Logic, Language and Information

2021 | **MGS21**, In Cyberspace
Midlands Graduate School in the Foundations of Computing Science

Professional Experience

10/2018 - 8/2019 | **Technomedia d.o.o**
Software Engineer
Reverse engineering of the connection API for obsolete peripheral devices such as cameras and tag readers.

07/2017 - 9/2017 | **DM Dokumenten Management GmbH**
Software Engineer Intern
Designed and implemented a setup and configuration application for Lobotalk client and server.

04/2016 - 04/2017 | **Neutrinos IT/AI Justice Association**
Software Engineer Intern
Developing a private and secure self-hosted cloud solution.

Publications

1. **Markovic D.**, & Denecker M., (2024). Order-Sorted Intensional Logic: Expressing Subtyping Polymorphism with Typing Assertions and Quantification over Concepts. In **Proceedings 40th International Conference on Logic Programming** (ICLP 2024).
2. **Markovic D.**, & Denecker M., (2024). Solving "Greeting a Customer with Unknown Data" Challenge with Epistemic DMN. In **Proceedings of International Joint Conference on Rules and Reasoning 2024** (RuleML+RR 2024).
3. **Markovic D.**, & Bogaerts B., & Passmore. G., (2024). Modeling and verifying simple vehicle controller, such as the Triton unmanned aircraft systems of the US Navy: using Imandra system and first-order logic. In **book Demystifying Artificial Intelligence Symbolic, Data-Driven, Statistical and Ethical AI, Chapter 4 Reasoning with first-order logic. Published by De Gruyter (p. 136)** (2024).
4. **Markovic D.**, & Vandevelde S., Vanbesien L., & Vennekens J., & Denecker M., (2024). An epistemic logic for modeling decisions in the context of incomplete knowledge. In **Proceedings of the 39th ACM/SIGAPP Symposium on Applied Computing** (SAC 2024).
5. **Markovic D.**, & Bruynooghe M., & Denecker M., (2023). Towards Systematic Treatment of Partial Functions in Knowledge Representation. In **Logics in Artificial Intelligence - European Conference on Logics in Artificial Intelligence 2023, part of Lecture Notes in Computer Science** (JELIA 2023).
6. **Markovic D.**, & Vandevelde S., & Vennekens J., & Denecker M., (2022). On the Semantics of "null" in DMN: Undefined is not Unknown. In **Proceedings of International Joint Conference on Rules and Reasoning 2022** (RuleML+RR 2022).

Teaching Experience

2021 - Present | **Modeling of Complex Systems**, KU Leuven
Professor: Prof. Marc Denecker
Teaching assistant for the master of Artificial Intelligence course Modeling of Complex Systems. Led 11 weeks of double exercise sessions (5 hours), created and graded project assignments, and the practical part of the exams. On average, 170 students are enrolled in the course each year. This course covers a variety of topics like first-order logic, inductive definitions, logic programming, linear time calculus, temporal modal logics, refinement, expressivity results of first-order logic, conflict-driven clause learning, and algorithms for CTL and LTL model checking.

Programming languages

I have experience developing custom algorithms and software in C, C++, C#, Rust, and Python. I am also familiar with web development languages including HTML, CSS, JavaScript, and PHP. Additionally, I have limited hands-on experience with Haskell, MiniZinc, ASP, Prolog, ProB, and Event-B. I have extensive experience with IDP3 and IDP-Z3.