

Timothy van Bremen

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Academic Employment and Education

Postdoctoral Research Fellow , National University of Singapore Mentor: Prof. Kuldeep S. Meel	2022–present
PhD Computer Science , KU Leuven Supervisors: Prof. Luc De Raedt, Prof. Ondřej Kuželka (CTU in Prague)	2018–2022
MS Computer Science , National Taiwan University Supervisor: Prof. Tony Tan	2015–2017
BEng Mathematics and Computer Science , Imperial College London (Dean's List for top 10% of class in final year)	2012–2015

Selected Publications

Conference Papers

- ICDT-24 **Conjunctive Queries on Probabilistic Graphs: The Limits of Approximability**
Antoine Amarilli, [Timothy van Bremen](#), and Kuldeep S. Meel
International Conference on Database Theory (ICDT) 2024
- PODS-23 **Probabilistic Query Evaluation: The Combined FPRAS Landscape**
[Timothy van Bremen](#) and Kuldeep S. Meel
ACM Symposium on Principles of Database Systems (PODS) 2023
- AAAI-22 **Domain-Lifted Sampling for Universal Two-Variable Logic and Extensions**
Yuanhong Wang, [Timothy van Bremen](#), Yuyi Wang, and Ondřej Kuželka
AAAI Conference on Artificial Intelligence (AAAI) 2022
- KR-21 **Lifted Inference with Tree Axioms**
[Timothy van Bremen](#) and Ondřej Kuželka
International Conference on Principles of Knowledge Representation and Reasoning (KR) 2021
(Marco Cadoli Best Student Paper Award Runner-up)
- UAI-21 **Faster Lifting for Two-Variable Logic Using Cell Graphs**
[Timothy van Bremen](#) and Ondřej Kuželka
Conference on Uncertainty in Artificial Intelligence (UAI) 2021
- AAAI-21 **Symmetric Component Caching for Model Counting on Combinatorial Instances**
[Timothy van Bremen](#), Vincent Derkinderen, Shubham Sharma, Subhjit Roy, and Kuldeep S. Meel
AAAI Conference on Artificial Intelligence (AAAI) 2021
- ILP-21 **Automatic Conjecturing of P-Recursions Using Lifted Inference**
Jáchym Barvínek, [Timothy van Bremen](#), Yuyi Wang, Filip Železný, and Ondřej Kuželka
International Conference on Inductive Logic Programming (ILP) 2021
- IJCAI-21 **Fast Algorithms for Relational Marginal Polytopes**
Yuanhong Wang, [Timothy van Bremen](#), Yuyi Wang, Juhua Pu, and Ondřej Kuželka
International Joint Conference on Artificial Intelligence (IJCAI) 2021
- PROBPROG-21 **From Probabilistic NetKAT to ProbLog: New Algorithms for Inference and Learning in Probabilistic Networks**
Birthe van den Berg, [Timothy van Bremen](#), Vincent Derkinderen, Angelika Kimmig, Tom Schrijvers, and Luc De Raedt
International Conference on Probabilistic Programming (PROBPROG) 2021
- IJCAI-20 **Approximate Weighted First-Order Model Counting: Exploiting Fast Approximate Model Counters and Symmetry**
[Timothy van Bremen](#) and Ondřej Kuželka
International Joint Conference on Artificial Intelligence (IJCAI) 2020

CIKM-19 **Ontology-Mediated Queries over Probabilistic Data via Probabilistic Logic Programming**

Timothy van Bremen, Anton Dries, and Jean Christoph Jung

ACM International Conference on Information and Knowledge Management (**CIKM**) 2019

Journal Papers

AIJ-23 **Lifted Inference with Tree Axioms**

Timothy van Bremen and Ondřej Kuželka

Artif. Intell. (**AIJ**) 2023

KI-20 **onto2problog: A Probabilistic Ontology-Mediated Querying System using Probabilistic Logic Programming**

Timothy van Bremen, Anton Dries, and Jean Christoph Jung

Künstliche Intell. (**KI**) 2020

Dissertations

PhD **Symmetry at Many Levels: Exploiting Symmetry for Fast Probabilistic Inference and Counting**

Timothy van Bremen

2022

Author list for [ICDT-24], [PODS-23], [KI-20], and [CIKM-19] is given in alphabetical order, as per the norm in theoretical computer science.

Software

FASTWFOMC

A tool for computing the weighted first-order model count of a two-variable sentence in a domain-lifted way.

ONTO2PROBLOG

A tool for ontology-mediated query answering over probabilistic data for ontologies formulated in OWL 2 EL.

SYMGANAK

A probabilistic exact model counter with support for symmetric component caching.

Awards and Funding

Invited Attendee (Travel Funded) – Simons Institute for the Theory of Computing	2023
Travel Funding for Invited Research Visit – Group of Prof. Moshe Y. Vardi, Rice University	2023
KR 2021 Marco Cadoli Best Student Paper Award Runner-up	2021
VTK “Golden Chalk” Award for Best Teaching Assistant in AI	2021
VTK “Golden Chalk” Award for Best Online Teaching Method in AI	2021
National Taiwan University Financial Assistance Grant for International Students Tuition waiver and stipend of NT\$6,000/month	2015–2017
Imperial College London Dean’s List for Top 10% of Class in Final Year	2015
Imperial College London Undergraduate Research Award £2,000 value	Summer 2013

Short Research Visits

Rice University Host: Prof. Moshe Y. Vardi	October 2023
University of California, Los Angeles Host: Prof. Guy Van den Broeck	June 2023

Teaching

Programming Languages and Programming Methodologies (H02A3), KU Leuven
Exercise sessions, 2×2.5 hours per week over 12 weeks per year

2019, 2020, 2021

Mentorship

Thesis Supervision Arnout Verboven (2021), Jordy Heusdens (2020), Antoon De Cleen (2019). All computer science master's students at KU Leuven.

Other Mentorship

Research in Industrial Projects for Students (RIPS) program mentor
Institute for Mathematical Sciences (IMS), Singapore
With the MOH Office for Healthcare Transformation (MOHT)

May–July 2023

Service

Co-organizer of the NUS AlgoTheory seminar series (2022-23), with 30+ speakers from across Singapore and abroad.

Selected program committee memberships and invited reviewing duties: *PODS* (2024), *ICML* (2023), *NeurIPS* (2023, 2022), *IJCAI* (2022), *AAAI* (2021), *ECAI* (2023, 2020), *CPAIOR* (2023), and the *Machine Learning* journal.

References

Available on request.